THE OHIO STATE UNIVERSITY

RESEARCH FOUNDATION

1314 KINNEAR ROAD COLUMBUS 12, OHIO

USNC-IGY ANTARCTIC GLACIOLOGICAL DATA FIELD WORK 1958 AND 1959

(Glaciology, Byrd Station and Marie Byrd Land Traverse, 1958-1959)

Report 825-2-Part XI
IGY Project No. 4.10
NSF Grant No. Y/4.10/285

W. E. Long

January 1961

USNC-IGY ANTARCTIC GLACIOLOGICAL DATA

Report Number 2: Field Work 1958-59

Part XI

GLACIOLOGY, BYRD STATION AND MARIE BYRD LAND TRAVERSE, 1958-1959

by

W. E. Long

The Ohio State University
Research Foundation
Columbus 12, Ohio

Project 825, Report No. 2, Part XI

Submitted to the

U. S. National Committee for the IGY
National Academy of Sciences, in partial fulfillment
of IGY Project Number 4.10 - NSF Grant No. Y/4.10/285

January 1961

CONTENTS

ILLUSTRATIONS

Page

FIGURES

TABLES

BYRD STATION AND TRAVERSE GLACIOLOGICAL DATA, 1958-1959

by

W. E. Long

The glaciological program at Byrd Station, Antarctica, during the 1958-1959 traverse was essentially a continuation of the program initiated by Vernon Anderson and Mario Giovinetto during 1957 and 1958. As in previous years, the work was divided into traverse glaciological studies during the summer and station observations during the winter. Certain modifications and additions to some of the original studies were made. This report is divided into two parts, traverse glaciology and station glaciology.

TRAVERSE GLACIOLOGY

Introduction

The 1958-1959 Marie Byrd Land traverse covered 915 nautical miles in a roughly triangular route extending south of Byrd Station and passing along the Horlick Mountains on the second leg of the triangle (Fig. 1). The traverse began from Byrd Station on November 1, 1958, under the leadership of Dr. Charles Bentley. The party consisted of:

Dr. Charles Bentley	seismologist
Leonard LeSchack	assistant seismologist
William Long	glaciologist
Fred Darling	assistant glaciologist
William Chapman	cartographer, U. S. G. S.
Jack Long	mechanic
Marion Todd	auroral observer acting as assistant glaciologist (present during first week).

This party did the majority of the traverse operation. However, at mile 534 George Doumani replaced Fred Darling as assistant glaciologist. At mile 747 the 1958-59 wintering-over people (Bentley, LeSchack, W. Long, and J. Long) were evacuated, leaving the 1959-60 party to cover the remaining 168 nautical miles to Byrd Station. The party finishing the traverse consisted of:

William Chapman	cartographer
George Doumani	glaciologist
Howard LeVaux	assistant glaciologist
Frank Chang	seismologist
Gerald Bennett	mechanic

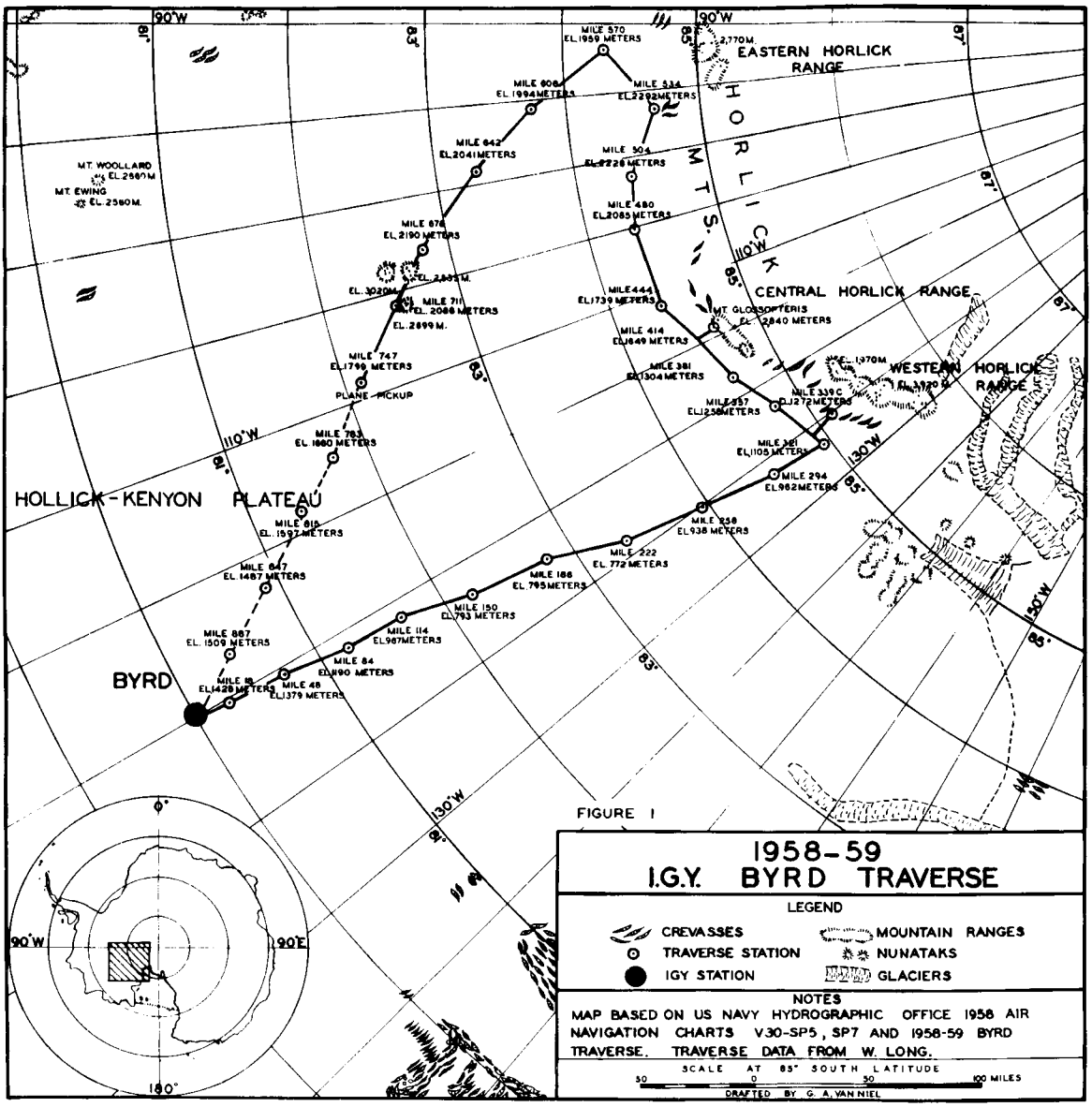


FIGURE 1

1958-59 I.G.Y. BYRD TRAVERSE

LEGEND

- CREVASSES
- MOUNTAIN RANGES
- TRAVERSE STATION
- NUNATAKS
- IGY STATION
- GLACIERS

NOTES

MAP BASED ON US NAVY HYDROGRAPHIC OFFICE 1958 AIR NAVIGATION CHARTS V30-SP5, SP7 AND 1958-59 BYRD TRAVERSE. TRAVERSE DATA FROM W. LONG.

SCALE AT 85° SOUTH LATITUDE

50 0 50 100 MILES

DRAFTED BY G. A. VAN NIEL

W.E. LONG 1960
INSTITUTE OF POLAR STUDIES
THE OHIO STATE UNIVERSITY

The glaciological data collected on the last 168 miles to Byrd Station, were prepared by George Doumani and are included in this report.

The general schedule was to travel about 30 to 36 miles one day, and to work the next day at that station. Normal glaciological and seismological operations were interrupted at the Western Horlick Range, the Central Horlick Range, and a group of nunataks on the final leg of the triangle, in order to make a geological study of the exposed rock. Cloudy weather at a few places hindered progress of the traverse by causing delays of the refueling flight.

Crevasses along the second leg of the route caused further delay and modification of the course. North of the Western Horlicks an extensive network of crevasses located about 30 miles from the mountain escarpment made the vehicle approach slow and dangerous. The Western Horlick Range was reached after 23 miles of foot travel. Only once during the attempts to reach the Western Horlick Range with vehicles did a Snocat drop far enough into a crevasse so that bridging was necessary to continue.

The surface near the Horlick Mountains was rougher than anywhere else along the traverse route. Sastrugi as much as two feet high required slow travel and caused several breakdowns of the vehicles. Usually these mechanical failures did not interrupt operations for more than a few hours because repairs could be made by the mechanic while the others carried on their studies.

Glaciological studies conducted during the 1958-59 traverse included the following:

Pit studies:	27 pits at about 30-36 mile intervals, (firn temperature, stratigraphy, density, and photography of the pit wall)
Oxygen-isotope collections:	at 3 stations
Rammsonde measurements:	6-mile intervals along entire route
10 - 15-meter core sample:	at 24 stations; density and fabric of cores
20-meter temperature:	at 3 stations
10-meter temperature:	at all pit stations
Sastrugi direction measurement:	3-mile intervals along entire route

These data are presented in Appendix I.

All field books and forms used for the compilation of these data are in the files of the Institute of Polar Studies, The Ohio State University, Columbus, Ohio.

Procedure

Pit Studies

The pits were a minimum of three meters deep, and one pit was four meters deep. The auger hole varied in depth from 10 to 15 meters, and three 20-meter holes were drilled, one on each leg of the traverse route.

The pit studies began by excavating a 2.5 m x 2.5 m surface area to a depth of three meters, leaving a one-meter-wide shelf at a depth of one meter and a one-meter-wide shelf at a depth of two meters. These shelves aided access to the pit and provided storage area and working space. During storms a tarpaulin was drawn over the pit, protecting the observer from the wind and snow.

A voice-powered phone set was used when conditions were severe, which allowed the man taking notes to be in the Snocat. During clear weather the recorder found it more efficient to work in the pit with the person making the measurement.

Density. Pit densities were measured using 500 cm^3 tubes. Each tube was numbered and weighed accurately on a balance at Byrd Station. The scales used in the field consisted of a platform spring scale graduated in grams. The scale was sensitive to position, and before each series of measurements a standard weight was used to calibrate the scales. When the scales were leveled the readings were accurate to about one gram.

The density tubes were pushed into the wall, carefully dug out, trimmed, capped and weighed. Some difficulty was encountered in snow of density greater than 0.59 cm^3. The tubes would deform and cause volume error. Such readings were repeated and the bent tubes recorded. The density calculated from such bent tubes is less than the actual density. On one occasion (at Mile 414) a supplementary core was made from the two-meter-shelf to pit bottom level because the tubes could not be forced into the firn. In this case, core lengths of five centimeters were used for density calculation.

Stratigraphy. The stratigraphy of the pit wall was described visually, using the "finger poking" method for determining hardness and a metal card with a millimeter grid for determining grain size. The figures were used to describe grain size. The smaller number refers to the average small dimension of a grain, while the larger number represents the largest grain dimension on the graduated cards. Crusts, sastrugi forms, lenses

and sublimation layers were noted. An eightfold scale of hardness was used but was recorded on the pit diagrams according to the fourfold scale used by other workers from Institute of Polar Studies at The Ohio State University.

Temperature. The pit wall temperatures were recorded with Weston dial theromometers. The accuracy was about ± 0.5°C. Accuracy was improved by placing all thermometers so that the needle was on the same side of the dial, because most needles move as the dial is rotated. Occasional checks were made placing all thermometers side by side in a layer of snow. Those showing consistently differing values were not used.

Oxygen-isotope collections. Samples for oxygen-isotope analysis were collected at the Byrd Station correlation pit, where they can be checked against known accumulation, and at three stations on the traverse: Mile 258, Mile 504, and Mile 747. Samples of snow were taken from 4 cm intervals to depths of 200 cm at Byrd Station, 72 cm at Mile 258, 204 cm at Mile 504, and 236 cm at Mile 747. These samples were handled on the stainless steel density tube trimmer, and were poured with an aluminum funnel into the bottles provided by the California Institute of Technology. Caps were tightened and retightened and the bottles packed in the provided container and shipped to the above institution.

Pit-wall photography. In order to photograph the pit wall, a hole was drilled from 2 to 5 cm behind the study wall, and illuminated with a 12-volt automobile headlamp placed on a wooden doughnut-shaped holder. The holder was placed over the hole and the light directed downward so the beam reached the bottom. In order to assure a constant scale, the camera was held in position by attachment to a rigid rod about 300 cm long which hung from a ladder so that the rod was at a measured distance of one meter from the study wall and parallel to it. At a distance of one meter, the 35 mm camera with a standard 50 mm lens has a field approximately 54 cm in long dimension. With the rod parallel to the pit wall, a camera holder was fitted in holes in the rod so that photographs could be made from the 29, 79, 129, 179, 229, and 279 cm levels. Two exposures of each portion of the wall were made at one f-stop difference. The top photograph in each pit was taken at 1/25th of a second at f 5.6 and f 4.0, and the camera was opened up one f-stop for each lower position. The photographs were taken after covering the pit with a tarpaulin to exclude all sunlight. A sign with the station number was photographed before each series of pit photographs were taken to insure later identification. Careful smoothening and brushing with a whisk broom helped intensify the layer differences.

Rammsonde. The rammsonde was operated by the same person for the entire traverse except when parties changed. A second person recorded the data. This method provides more uniform data, as the rammsonde is subject to variation depending on the operator. The 1- and 3-kg. weights were used from heights of 10, 30, and 50 centimeters. Blows were continued until a noticeable change in penetration was noticed by the operator. The results are shown in both graphical and statistical form in this report.

Location of the individual studies in the pits. All measurements and samples were made on one wall of the pit from a section no wider than one meter. The temperatures were read in the portion of the wall that was used later for density sampling. The stratigraphy was described from this same wall section before it was cut up to remove the density tubes. The photographed wall was immediately adjacent to the section removed for density studies. The cut channel can be seen in some of the photographs. The rammsonde penetrations were made as near as possible to the density-channel and light-hole. This distance varied from 15 to 100 cm, though it was usually less than 50 cm from the density-channel.

The core was augered in the center of the floor of the snow-study pit.

When oxygen-isotope samples were collected, they were taken from the edge of the density-channel.

Core Study. A 10-meter hole was drilled with the SIPRE coring auger and the cores studied. The depth varied depending on the time available. The most common depth was 11 meters, thus insuring that the hole would be below the 10-meter depth for the temperature measurements. A 20-meter hole was drilled at three stations, Mile 222, Mile 504, and Mile 747.

In studying a core, it was first inspected visually for stratigraphic units, and then cut at the boundaries of these units. The minimum length of a section for study was 2.5 cm and the maximum length 10 cm. Previous experience has shown that in many cores, a given length which visually appeared to be homogeneous actually had differences in density within that length. In this study, therefore, if length of core appeared homogeneous, it was cut into several 10-cm segments and their density determined. Because the saw cut must be perpendicular to the length of the core, a Stanley steel carpenter's mitre saw was a large improvement over the rough 3-ply-type wooden mitre box provided in the normal glaciological kit. The wooden mitre box could produce differences of two to three millimeters in length, whereas the Stanley mitre rarely produced unequal side lengths.

The cores were measured to the nearest millimeter and weighed on the platform spring scale. A diameter of 75 mm was used in calculating densities of the cores. Grain size and tightness of packing were observed on each of the core lengths. The grain size was recorded as large, medium or small; and the packing as loose, medium or compact. The data for only the upper six meters are shown graphically, whereas those for the total core are given in table form.

Ten-Meter Temperature

The measurememt of the 10-meter-temperature was started immediately after the coring operation was completed. The thermohm element was lowered into the hole, and the opening was covered with plywood and snow. The temperature was read several hours later; most of the readings were made after the element had been in place overnight. A Wheatstone bridge was used to make the readings. The instrument was kept inside the Snocat until time for use and was left outside only long enough to take the reading. The accuracy is believed to be ± 0.01°C if the instrument does not get too cold (below -18°C).

A test was undertaken to determine how long the temperature in the auger hole takes to stablize. The results follow:

	Time	Temperature (°C)	Depth
4 Jan 59	1145	- 28.6	10 meters
	1215	- 29.4	
	1245	- 29.4	
	1315	- 29.4	
	1415	- 29.4	
	1515	- 29.4	
	1615	- 29.4	
	1715	- 29.4	
5 Jan 59	1130	- 29.4	
5 Jan 59	1550	- 28.7	20 meters
	1800	- 29.1	
	1900	- 29.1	
	2000	- 29.1	
	2100	- 29.1	
6 Jan 59	1200	- 29.2	

The table above shows that there is a tendency for the temperature in the auger hole to stablize rapidly. Within half an hour, the 10-meter hole maintained a constant temperature. The 20-meter hole changed 0.1°C overnight. The single test is by no means a thorough study, but shows the reaction of one hole to the methods used for measurements of 10 meter temperature. Also, it shows that small variations in firn temperatures exist below 10 meters. Comparative values of the three 20-meter-holes are shown below:

Station	10-m Temperature	20-m Temperature
Mile 222	- 23.9°C	- 24.2°C
Mile 504	- 37.1°C	- 37.1°C
Mile 747	- 29.4°C	- 29.2°C

It will be noted that the largest variation is only 0.3°C. Although the 20-meter hole has a lower temperature than the 10-meter hole at mile 222, and is warmer at Mile 747, the difference is insignificant.

Figure 2 shows the variation of the 10-meter temperature with changes of elevation along the traverse route. The configuration of the subglacial topography is also given in the figure.

Sastrugi Orientation

Sastrugi Orientation. The sastrugi axes were measured with a Brunton compass at each three-mile altimetry interval. Measurement was made parallel to the long axis of the form which is assumed to be the direction of the wind responsible for creating the surface form. At localities where more than one direction of sastrugi were noted, the dominant sastrugi direction is listed first. The list of directions is on file at the Institute of Polar Studies, The Ohio State University.

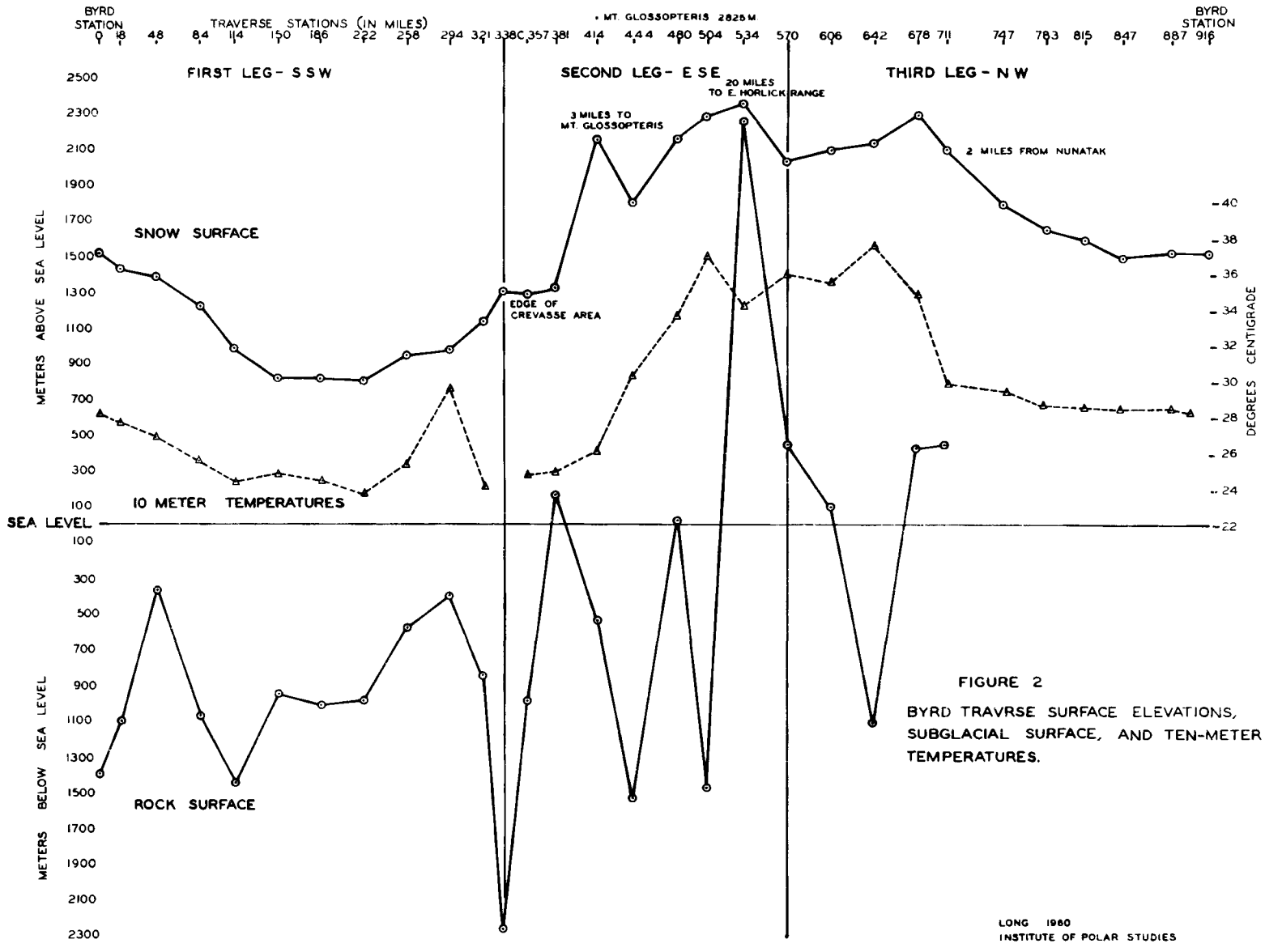


FIGURE 2

BYRD TRAVRSE SURFACE ELEVATIONS, SUBGLACIAL SURFACE, AND TEN-METER TEMPERATURES.

STATION GLACIOLOGY

Introduction

The Glaciological studies conducted at Byrd Station during the 1956 winter season include:

1. Study of six snow pits in the Byrd Station area.
2. Firn temperature, read twice daily.
3. Snow accumulation from a field of 120 poles, read once a week.
4. Surface study area where 250 dowels were read after each major change in the weather.
5. Deep pit deformation, measured once a month.
6. Relative movement survey.

These data are presented in Appendix II. A map of the glaciology area is given in Figure 3.

Procedure

Pit Studies

Five pits were dug in a rectangular area several kilometers to the southwest of Byrd Station where seismologists made a series of reflection shots to determine bedrock configuration. The area was 4 x 9 kilometers, and a pit was dug at each corner and in the center of this rectangular area. The pits were three meters deep, and measurements were made in accordance with the traverse pit methods already described. Cores from the 10-meter holes were studied.

A correlation pit was dug at Accumulation Pole No. 7, one of the original seven accumulation poles emplaced by Mario Giovinetto on March 12, 1957. This 2-meter pit was dug in October, 1956, thus giving a record of accumulation for nineteen months. Oxygen-isotope samples were also taken from this pit.

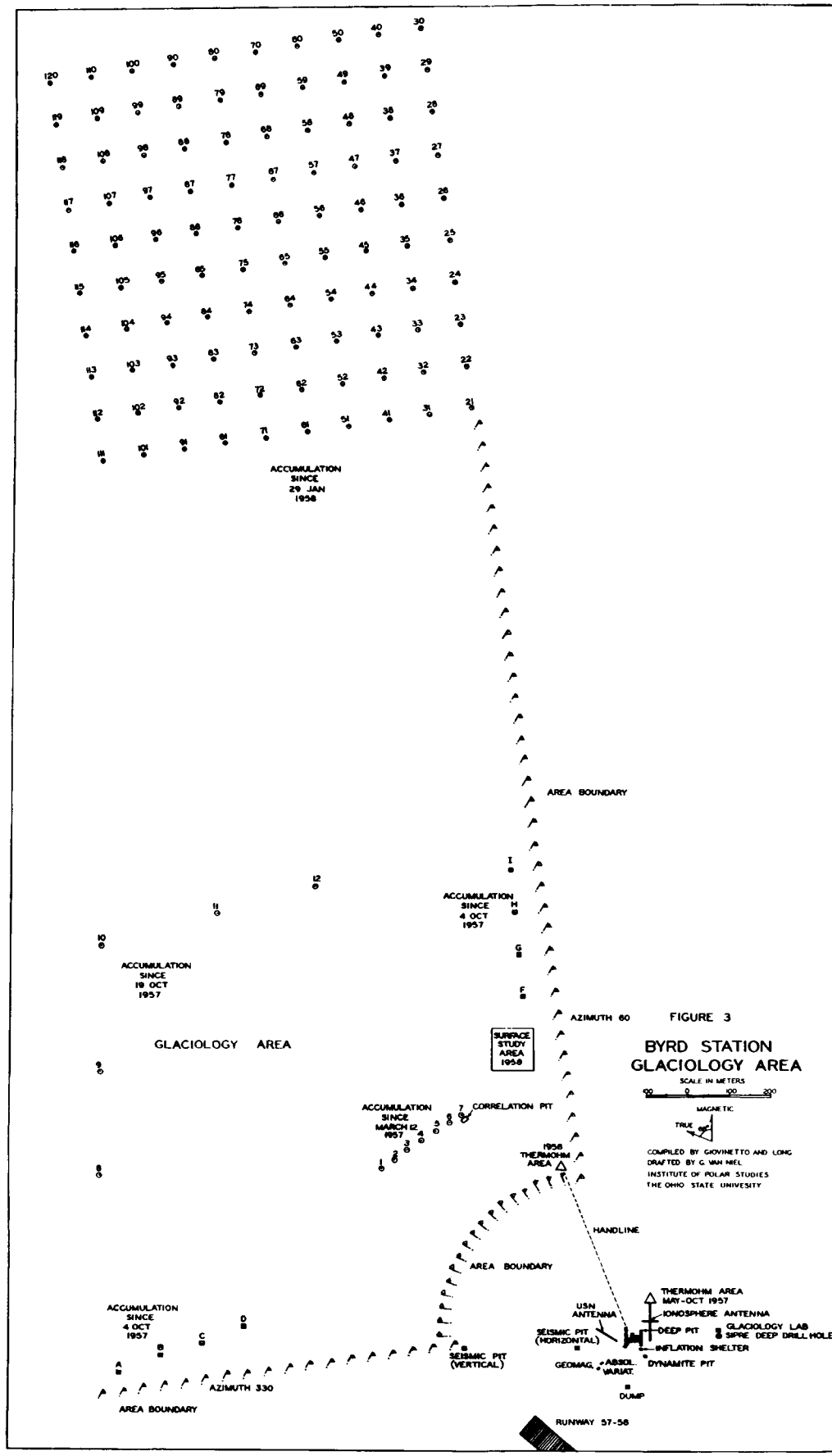


FIGURE 3

BYRD STATION GLACIOLOGY AREA

SCALE IN METERS

100 0 100 200

MAGNETIC

TRUE

COMPILED BY GIOVINETTO AND LONG
DRAFTED BY G. VAN NIEL
INSTITUTE OF POLAR STUDIES
THE OHIO STATE UNIVESITY

Firn Temperature

Twice each day throughout the winter season the temperature of the firn was taken at depths of 0, 50, 100, 200, 400, 800, and 1,600 centimeters. Air temperature, as recorded by the Weather Bureau thermograph, was noted at the time of each reading of the thermohm system. An accumulation record at the firn temperature site was maintained.

Snow Accumulation

Snow accumulation was determined from 120 poles that covered an area of about 6 km^2. Originally, Mario Giovinetto emplaced 20 poles during the 1957 winter season; but during the summer of 1957-58, George Toney added 100 new bamboo poles. The pattern of the 100 poles was a square with each pole placed 100 meters from the next, making 10 rows of 10 poles. This accumulation field is located about 2 km to the windward (NNE) of Byrd Station. Density measurements were made monthly, of the snow that had accumulated.

During the 1958 winter season the quarter to the windward of the station was placed off limits to all vehicles, and only persons wearing skis entered this restricted area. Thus, artificial disturbance of the surface was kept to a minimum.

Figure 4 is a graph of snow accumulation from March 1957 to December 1958.

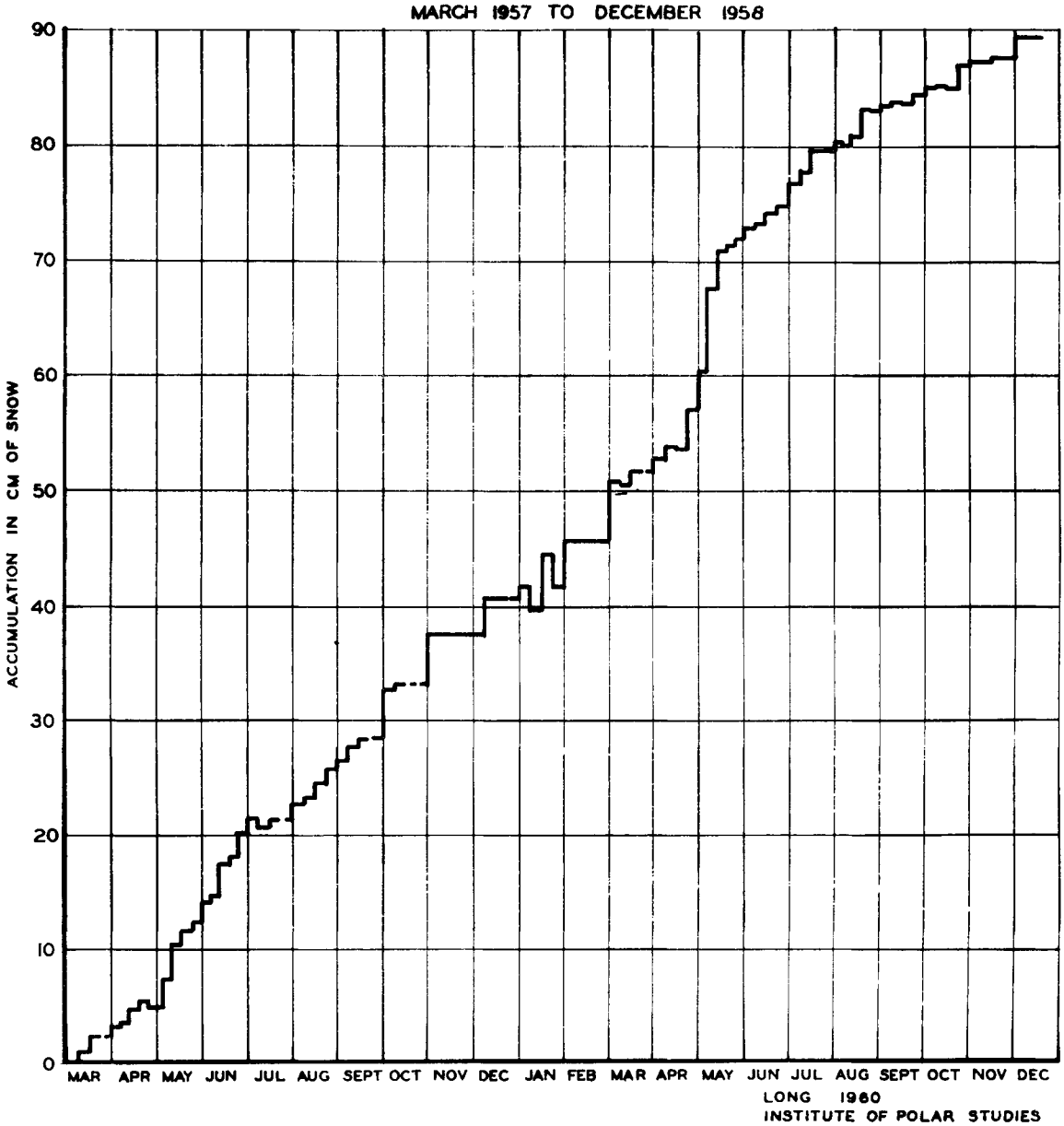
Surface Study

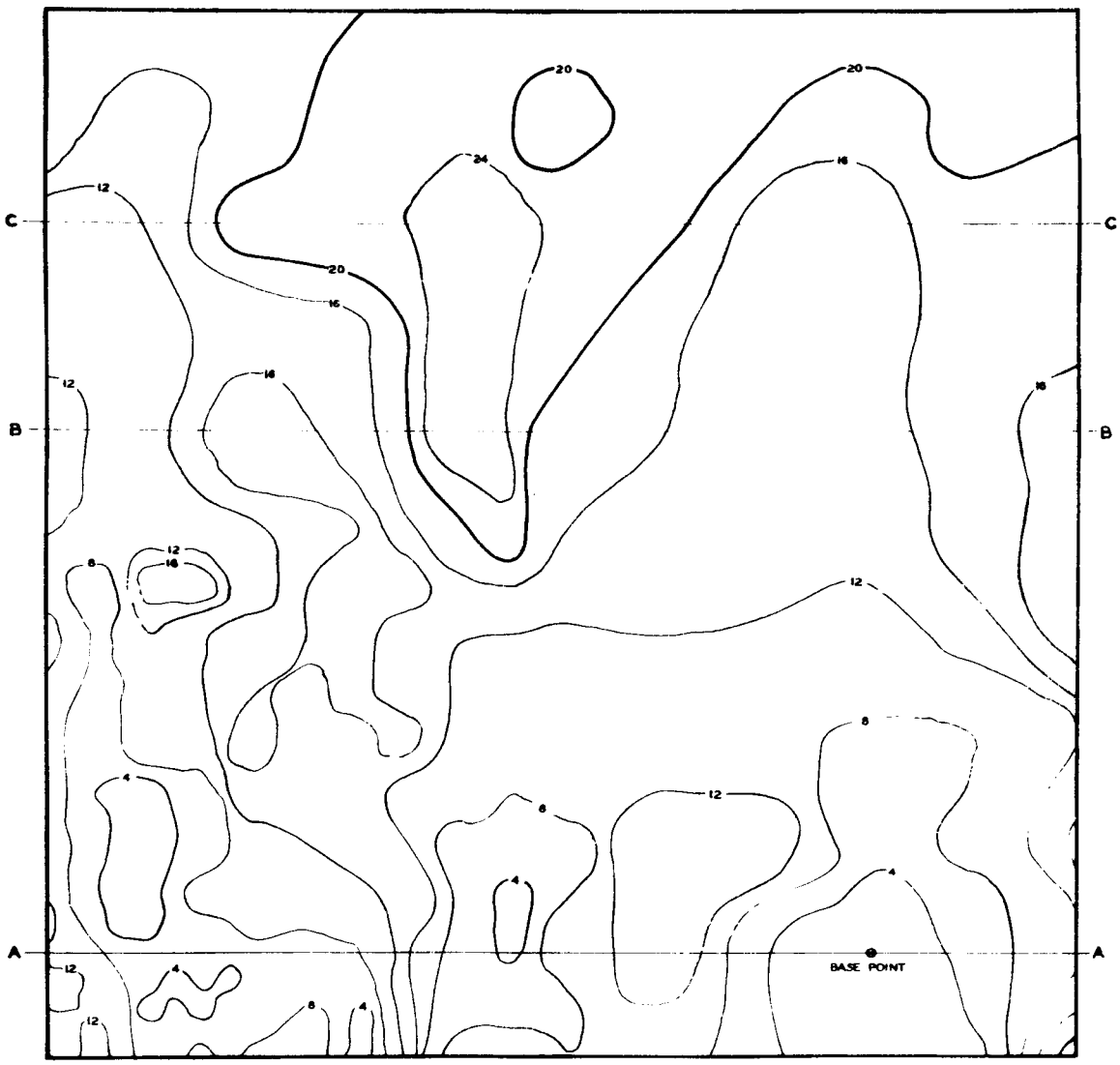
The surface study was located within the protected glaciological study area mentioned above. Within a 100 m square area, 250 dowels graduated with 2 cm lines were emplaced. Upon establishment of the dowel field, the relative elevation of the base of each dowel was determined and the lowest point referred to as zero. Using measurements of accumulation at each of the 250 dowels, contour maps have been prepared showing the changing form of the surface. Four typical maps are shown as Figures 5 - 8. Measurement of the accumulation was made after every major change in the weather (snow or wind storm).

FIGURE 4

SNOW ACCUMULATION

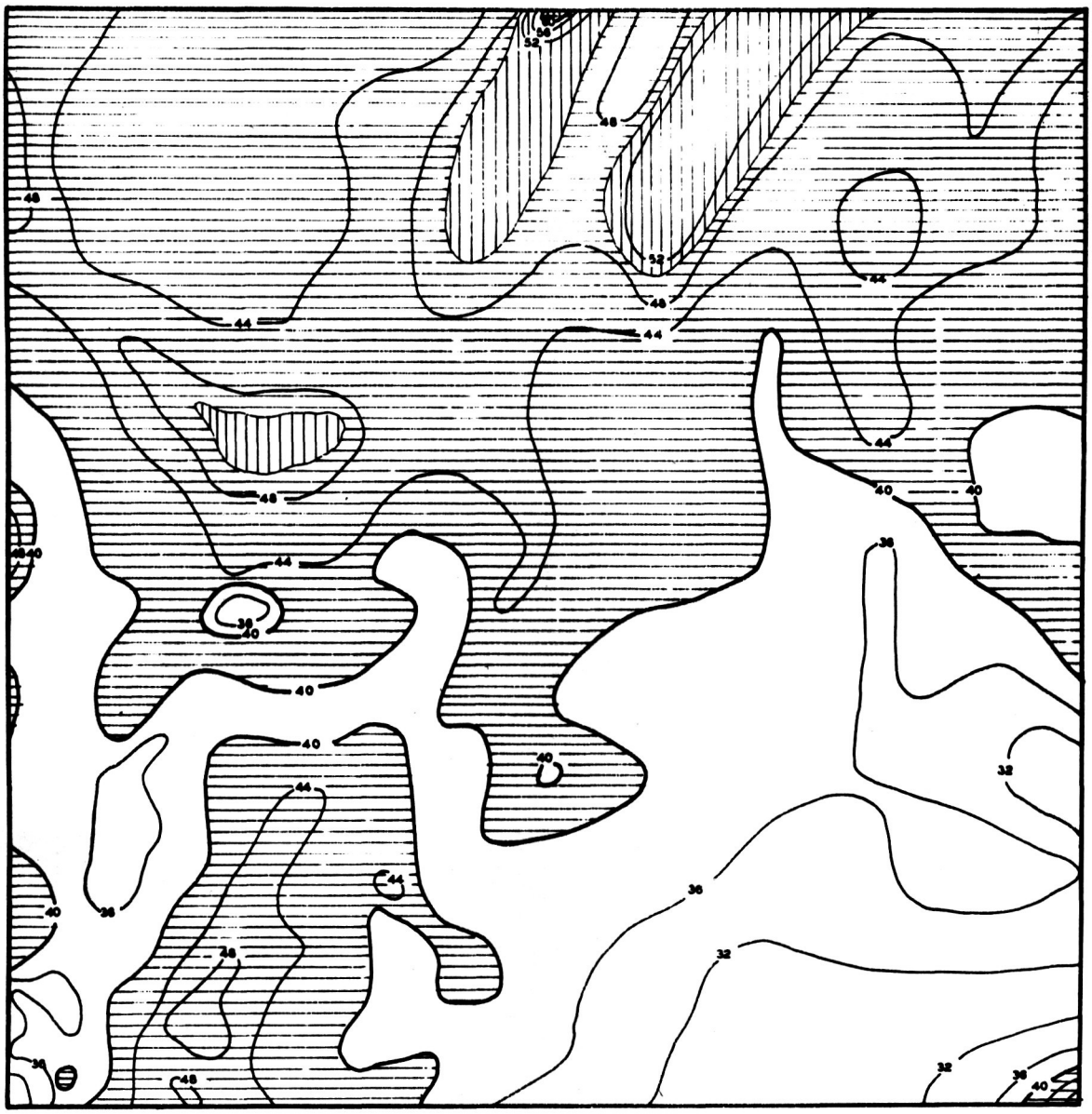
MARCH 1957 TO DECEMBER 1958





* CONTOURS MEASURED FROM BASE POINT, WHICH WAS LOWEST POINT OF ORIGINAL SURFACE

FIGURE 5



TEMP -34°C
WIND N. 15 KNOTS

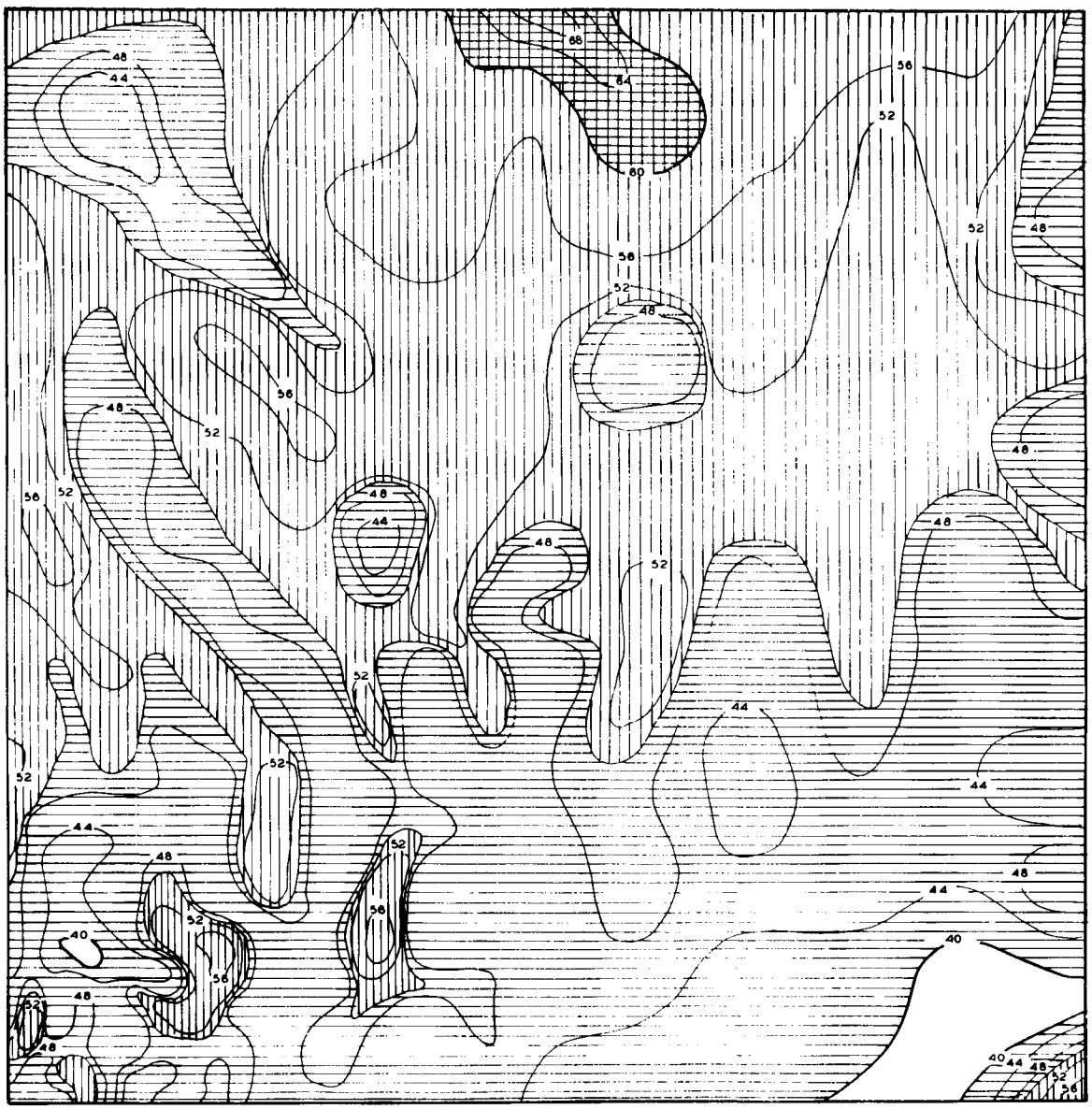
21 JUNE 1958

0 20 M

CONTOUR INTERVAL 4 CM
MAX. RELIEF 28 CM

LONG 1960
INSTITUTE OF POLAR STUDIES

FIGURE 6



TEMP -38.5°C
WIND 12 KNOTS NNE

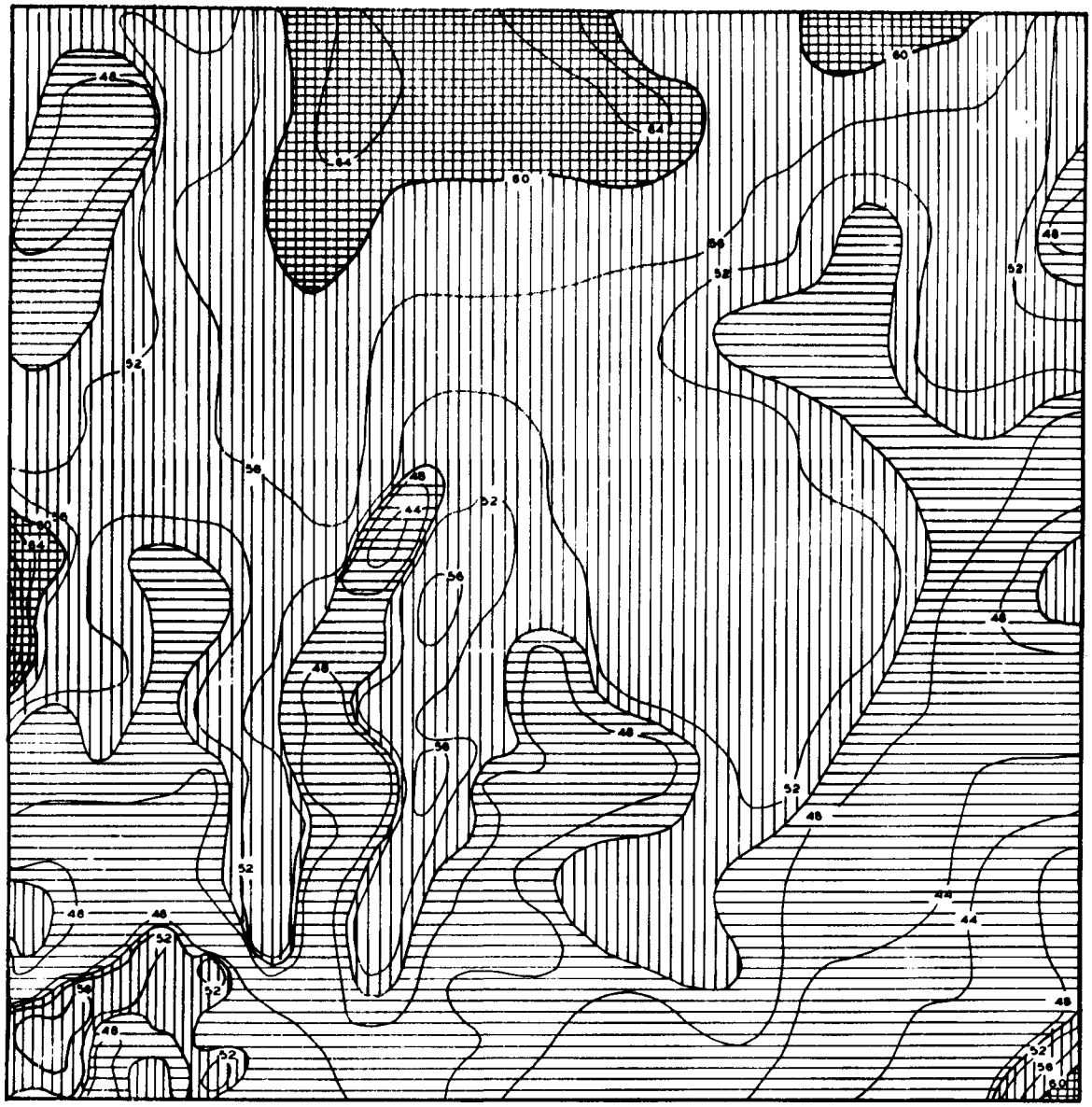
27 AUGUST 1958

0 20M

CONTOUR INTERVAL 4CM
MAX. RELIEF 28CM

LONG 1960
INSTITUTE OF POLAR STUDIES

FIGURE 7



TEMP. -36.8°C
WIND 20 KNOTS NNE

5 OCTOBER 1958

0 20M

CONTOUR INTERVAL 4CM
MAX. RELIEF 20CM

LONG 1960
INSTITUTE OF POLAR STUDIES

FIGURE 8

Deep Pit Deformation Measurements

The deep pit was excavated in the 1957 winter period by Vernon Anderson and Mario Giovinetto. Dowels were placed in the four walls at 2-meter intervals. Measurement of the horizontal distance between these dowels was made each month. The vertical distance between the dowels was also measured, as was the deformation of two circles inscribed on the walls at the base of the pit. Table 1 gives the horizontal deformation values.

Relative Movement Survey

The relative movement network was established at Byrd Station on October 3, 1957, by Vernon Anderson and Charles Bentley. It was resurveyed on October 23, 1958, by Charles Bentley and William Long. In one year, the baseline of 1,500 m had not changed greater than the taping error. The measured distance in October 1958 was 1,500.08 m. The data for the surveyed angles is located in the files of the Institute of Polar Studies, The Ohio State University.

Snow Accumulation Along Little America-Byrd Station Trail

In January-February, 1957, Anderson and Giovinetto placed accumulation poles at 50-mile intervals along the tractor-trail from Little America to Byrd Station. These poles were read in October, 1957 by Lieutenant White and E. T. M. Anderson of the U. S. Naval Construction Battalion, who manned the tractor-train. They were again read by Anderson in February, 1958. The latest measurements were made in October, 1958, by Chief Sturgess of the tractor-train party of that year. The accumulation figures for the stations along the trail are given in Table 2.

Table 1. Byrd Station Deep Pit Horizontal Deformation Values
26 November 1957 - 23 December 1958

		DATE									
DEPTH	DBG	11/26/57	12/2/57	4/30/58	5/31/58	6/30/58	7/31/58	9/1/58	10/2/58	11/2/58	12/23/58
Surface	701	164.30	164.90	162.00	161.57	161.29	160.95	160.15	160.45	160.20	159.40
Surface	702	171.90	171.70	—	168.40	168.13	167.45	167.13	166.72	166.30	165.40
2M	703	161.30	161.10	158.60	158.00	157.55	157.00	156.45	156.00	155.50	154.60
2M	704	178.10	178.00	174.10	174.19	173.60	172.95	172.30	171.77	171.15	170.00
4M	705	160.80	161.60	159.30	158.90	158.60	158.30	157.88	157.60	157.30	156.60
4M	706	180.30	180.20	178.70	178.14	177.83	177.45	177.08	176.75	176.45	175.80
6M	707	166.60	166.60	165.60	165.26	165.50	164.85	164.55	164.30	164.05	163.60
6M	708	—	191.30	191.70	190.50	189.90	189.62	189.40	189.15	189.10	188.40
8M	709	182.30	182.30	181.30	181.21	181.11	180.90	181.25	180.55	180.40	180.10
8M	710	199.40	199.60	199.00	199.35	198.70	198.65	198.25	198.10	197.80	198.50
10M	711	195.30	195.30	194.50	194.55	194.40	194.25	194.15	194.00	193.95	194.00
10M	712	200.30	200.10	199.70	199.32	199.25	199.30	198.85	199.00	198.60	198.25

Table 2. Little America-Byrd Station Trail Accumulation (Established Jan-Feb 1957 by V. Anderson and M. Giovinetto)

Mile	October 1957 (Smith and Anderson)	March 1958 (V. Anderson)	October 1958 (Sturgess)	October 1957-October 1958, one year snow Accumulation
20	53 cm	86 cm	- cm	- cm
40	48	68	-	-
60	55	74	-	-
80	46	57	114	68
100	40	56	112	72
120	33	36	72	39
140	32	37	96	64
160	27	34	86	59
180	19	33	79	60
200	11	24	79	61
250	44	52	104	60
300	25	41	78	53
350	21	28	81	60
400	-	-	-	-
450	-	46	98	-
500	-	42	109	-

APPENDIX I

TRAVERSE DATA

RAM HARDNESS DATA SHEET

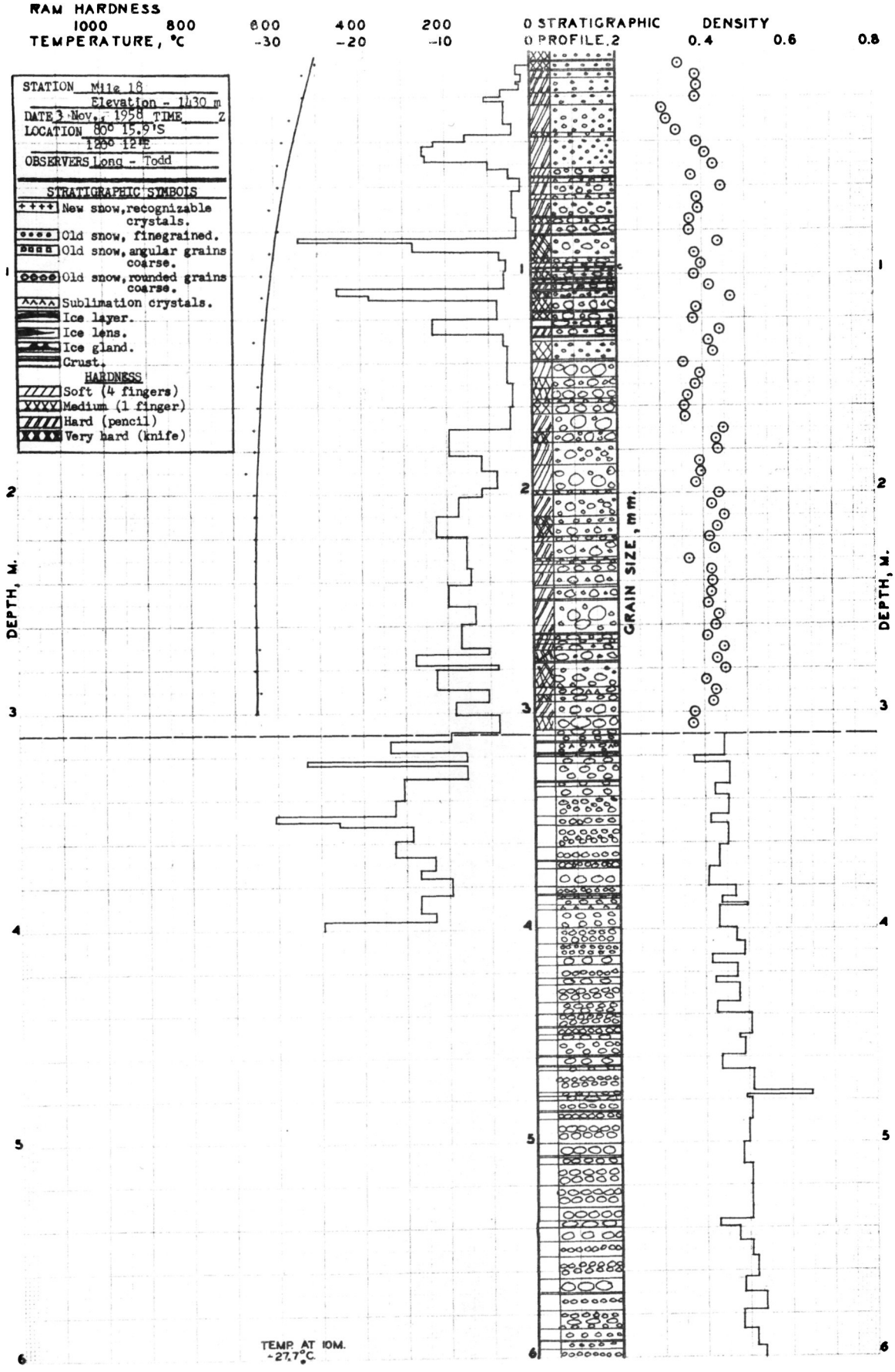
Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg
Mile 6	
1 November 1958	
0- 3	22
3- 5	102
5- 7	182
7- 10	152
10- 12	92
12- 17	92
17- 19	150
19- 21	117
21- 26	60
26- 38	37
38- 41	102
41- 47	127
47- 51	210
51- 60	222
60- 63	182
63- 76	92
76- 82	62
82- 99	47
99-104	75
104-116	115
116-123	158
123-137	35
137-152	45
152-156	115
156-169	65
169-173	93
173-181	36
181-188	157
188-195	285
195-200	165
200-208	115
208-213	110
213-216	756
216-217	756
217-223	206
223-229	181
229-247	81
247-252	126
252-266	418
266-272	181
272-280	381
280-284	231
284-290	182
290-303	144
303-312	172
312-316	307
316-325	207
325-329	269
329-337	287
337-343	287
343-346	307
346-350	269
350-357	114
357-364	199
364-369	157
369-371	757
371-372	907
372-379	244
379-385	157
385-392	244
392-400	99
Mile 12	
2 November 1958	
0- 3	25
3- 6	69
6- 9	69
9- 12	202
12- 15	122
15- 18	82
18- 24	62
24- 35	15
35- 40	62
40- 43	52
43- 52	35
52- 55	32
55- 60	80
60- 62	62
62- 65	42
65- 69	32
69- 72	247
72- 80	316
80- 82	364
82- 84	229
84- 89	59
89-101	155
101-105	117
105-112	95
112-131	45
131-143	43
143-146	215
146-150	343
150-156	155
156-165	65
165-173	107
173-182	125
182-192	77
192-198	143
198-211	395
211-222	95
222-228	95
228-234	155
234-239	365
239-245	265
245-253	95
253-259	95
259-266	71
266-273	186
273-282	256
282-287	256
287-291	231
291-293	366
293-295	532
295-297	307
297-306	124
306-314	477
314-317	1007
317-318	607
318-323	307
323-328	217
328-342	569
342-347	247
347-358	169
358-366	193
366-375	270
375-381	182
381-390	207
390-400	217
Mile 18	
(Not at Pit)	
2 November 1958	
1- 3	27
3- 7	29
7- 10	22
10- 18	21
18- 21	22
21- 23	32
23- 31	40

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
31- 38	49	360-365	457		
38- 43	86	365-371	1007		
43- 48	20	371-374	1507		
48- 56	36	374-376	607		
56- 58	107	376-381	337		
58- 62	152	381-388	264		
62- 78	33	388-398	127		
78- 81	68	398-405	359		
81- 84	68	405-408	507		
84- 87	231	408-416	138		
87- 95	102	416-422	308		
95- 98	114	422-428	308		
98-104	95	428-432	648		
104-110	80	432-435	408		
110-118	207	435-439	383		
118-133	69	439-448	342		
133-138	95	448-452	383		
138-157	47	452-455	508		
157-161	95	455-459	458		
161-173	49	459-464	308		
173-180	197	464-471	437		
180-188	108	471-473	533		
188-196	118	473-480	501		
196-198	141	480-483	508		
198-200	456	483-491	798		
200-204	494	491-495	308		
204-210	206	495-499	458		
210-216	206	499-500	908		
216-223	284				
223-234	87				
234-242	249				
242-249	156				
249-256	135				
256-269	145				
269-275	231				
275-281	256				
281-290	240				
290-295	217				
295-299	269				
299-313	146				
313-318	307				
318-325	199				
325-335	216				
335-339	157				
339-344	307				
344-356	157				
356-360	307				


RAM HARDNESS
1000 800
TEMPERATURE, °C
800 400 200
-30 -20 -10
0 STRATIGRAPHIC
0 PROFILE 2
DENSITY
0.4 0.6 0.8
STATION Mile 18
Elevation - 1430 m
DATE 3 Nov., 1958 TIME Z
LOCATION 80° 15.9'S
120° 12'E
OBSERVERS Long - Todd
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP. AT 10M.
-27.7°C.

IGY Byrd Traverse 1958-59

Station Mile 18

Date 3 November 1958

Observers Long, Todd

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 3	S	< .5	Newer snow
3			Crust
3- 7	M	< .5	
7			Crust
7- 11	H	< .5	
11- 18	S	.5	Very soft
18- 23	H	< .5	
23- 35	S	.5-1.0	
35- 37	M	.5	
37- 51	H	.5	
51- 55	S	1.0-1.5	
55			Crust
55- 58	S	1.0-2.0	Very soft
58- 63	H	.5-1.5	
63- 65	S	1.0-3.0	Drip grains
65- 73	H	1.0-1.5	
73- 76	M	1.0-3.0	
76			Crust
76- 81	H	1.0-1.5	
81- 82	S	2.0-4.0	Very soft
82- 91	VH	1.0-1.5	
91- 94	M	1.0-2.0	
94- 98	H	1.0-2.0	
96			Crust
98-101	M	1.0-2.5	
101			Crust
101-103	H	1.0-2.0	
103			Crust
103-106	H	1.0-1.5	
106			Crust
106-110	VH	1.0	
110-116	M	1.0-3.0	Drip grains
116			Crust
116-120	M	1.0-3.0	
120-123	M	1.0-2.5	Softer than 116-120
123			Crust
123-126	H	1.0-3.0	
126-129	VH	1.0	
129-138	M	1.5-2.5	
138-139			1 cm thick granular crust
139-146	S	2.0-5.0	
146-151	H	1.0-1.5	

Station IGY Byrd Station 1958-59
Mile 18
(Continued)

Depth cm	Hard-ness	Grain Size, mm	Remarks
151-156	VH	1.5-2.5	
156-158	S	3.0-6.0	Loose, sublimation layer, cup shaped crystals
158-163	M	2.0-4.0	Drip grains
163-171	S	1.5-3.0	
171-176	VH	1.0-3.0	
176-186	H	1.0-2.0	
186-198	S	1.5-3.0	Drip grains
198-200	VH	1.0-2.0	
200-210	H	1.0-2.0	
210-213	VH	.5-1.0	
213-219	VH	1.0-2.0	Softer than layer above
219-221	S	1.5-3.0	
221-229	H	1.0-2.0	
229-230	S	1.0-3.0	
230-231	H	1.0-2.0	
231-235	S	2.0-5.0	Drip grains
235-241	H	1.0-1.5	
241-242	H	1.0-2.0	Softer than layer above
242-263	H	1.0-4.0	Drip grains, harder than 241-242
247			Crust
263			Crust
263-266	H	1.0-3.0	Softer than 242-263
266-268	H	1.0-2.5	Harder than above layer
268-271	H	1.0-2.5	
271-288	VH	1.0-2.0	
276			Crust
288-291	S	1.5-4.0	Drip grains
291-294	VH	1.0-2.5	
294-301	H	1.0-2.0	Drip grains
301-307	M	2.0-4.0	Drip grains
307-310	VH	1.0-3.0	Drip grains

IGY Byrd Traverse 1958-59

Station Mile 18

Date 3 November 1958

Observers Long, Todd

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
310-320	.442	M	M	1 cm loose zone at 7.5 cm; crust at 3.0 and 8.0 cm
320-323	.375	L	L	
323-333	.457	M	M	Crust at 8.0 cm
333-338	.422	L	M	
338-347	.452	D	M	
347-351	.412	M	M	
351-361	.452	D	M	
361-371	.431	D		Crust at 7.0 cm
371-380	.408	L	L	
380-385	.470	D	S	Crust at 3.0 cm
385-388	.437	M	M	
388-389	.497	L	L	Very loose and very large; sublimation
389-399	.431	M	M	
399-406	.471	D	M	
406-412	.490	D	S	
412-416	.414	L	L	
416-422	.471	M	M	
422-425	.421	L	L	
425-434	.479	D	M	
434-439	.423		M	Loose for 2 cm, medium for 3 cm
439-449	.507	D	M	Crust at 7.0 cm
449-451	.477	L	L	
451-459	.490	M	M	
459-466	.437	L		Crust at 5 cm
466-476	.510	D	S	
476-478	.544	D	M	
478-479	.494	L	M	
479-489	.508	D	M	Crust at 5 cm
489-500	.499	M	M	
500-510	.486	M	L	Crust at 6 cm
510-520	.508	D	M	
520-530	.505	D	M	
530-536	.505	M	L	
536-539	.430	L	L	
539-546	.477	M	L	
546-553	.506	D	M	
553-563	.518	D	M	
563-570	.488	L	L	
570-578	.539	D	S	Crust on top
578-587	.482			1-3 cm M packing, M grain; 3-7 cm L packing, L grain; 7-10 cm M packing M grain
587-595	.515	M	S	Crust at 6 cm

Depth cm	Density	Packing	Grain Size	Remarks
595-603	.533	D	S	
603-610	.446	L	L	Crust at 3.5 cm
610-612	.551	M	S	
612-617	.452	L	L	Very loose and large
617-626	.521	D	M	Crust at 9 cm
626-636	.527	D	M	
636-643	.528	L	M	Crust at 3 cm
643-649	.475	M	L	
649-659	.520	D	M	Crust at 4 cm
659-669	.533	D	M-S	
669-679	.538	D	M-S	
679-685	.563	D	S	
685-688	.552	D	M	
688-691	.548	L	M	Crust at 1.5 cm
691-694	.504	M	M	
694-705	.542	D	M	
705-708	.506	L	L	
708-716	.548	D	S	
716-726	.520	M	L	
726-735	.537	D	M	Crust at 5 cm
735-744	.549	M	M	
744-746	.506	L	L	
746-750	.518	M	M	
750-752	.503	L	L	Very large grains
752-762	.544	D	M	
762-772	.523	M	L	
772-778	.549	D	S	
778-785	.538	M	M	
785-791	.535	D	S	Some medium grains
791-796	.553	D	S	
796-806	.525	M	M	
806-811	.565	D	S	
811-821	.551	D	M	
821-831	.565	D	S	Some medium grains; crust at 4 cm, 6 cm, 8 cm
831-841	.535	M	L	
841-851	.565			0-3 D and L; 3-10 D and S
851-859	.608			0-2 M and S; 2-5 M and L; crust at 2 cm
859-869	.566	D	S	
869-879	.579	M	S	Two crusts at 6.5 cm; 6.5-10.0 cm D and S
879-890	.551	M	L	Crust at 2 cm
890-900	.554	M	M	
900-910	.576	D	M	Crust at 0.5 cm
910-930	.555	M	L	
930-938	.552			0-6 cm M and S; 6-9.9 cm D and S; crust at 6 cm

Depth cm	Density	Packing	Grain Size	Remarks
938- 943	.562			1-5 cm M and S; 5-8 cm L and L
943- 953	.536	M	M	
953- 963	.558	M	L	
963- 973	.568	M	M	
973- 978	.551	L	L	Crust at 3 cm
978- 984	.563	M	M	
984- 990	.545	L	L	
990- 995	.581	M	M	
995-1000	.542	L	L	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg
Mile 24	
4 November 1958	
1- 3	52
3- 8	82
8- 9	102
9- 12	32
12- 20	24
20- 23	52
23- 25	227
25- 31	152
31- 35	77
35- 45	42
45- 49	27
49- 55	77
55- 67	57
67- 70	52
70- 76	68
76- 85	34
85- 91	78
91- 95	41
95-100	153
100-109	58
109-115	120
115-130	41
130-136	86
136-139	115
139-145	62
145-156	48
156-162	45
162-166	41
166-171	203
171-175	96
175-183	41
183-187	231
187-195	231
195-199	276
199-203	96
203-214	168
214-222	100
222-227	156
227-237	229
237-242	219
242-253	87
253-257	231
257-261	306
261-274	109
274-280	131
280-282	306
282-288	157
288-294	407
294-298	757
298-304	582
304-306	307
306-313	221
313-316	307
316-319	307
319-327	176
327-332	157
332-335	457
335-343	193
343-348	247
348-352	232
352-360	193
360-366	507
366-369	607
369-375	382
375-382	284
382-386	382
386-392	507
392-398	582
398-400	457
Mile 30	
4 November 1958	
2- 8	19
8- 13	32
13- 15	32
15- 21	5
21- 25	32
25- 27	37
27- 29	77
29- 35	32
35- 41	42
41- 46	37
46- 54	40
54- 58	77
58- 62	52
62- 65	68
65- 66	152
66- 72	52
72- 76	127
76- 87	60
87- 97	58
97-102	103
102-106	91
106-108	128
108-111	185
111-116	148
116-121	60
121-129	73
129-133	73
133-139	50
139-145	143
145-151	65
151-160	45
160-173	49
173-174	635
174-185	47
185-193	28
193-199	96
199-208	56
208-213	61
213-220	263
220-226	174
226-230	131
230-234	68
234-240	65
240-246	89
246-253	48
253-265	76
265-270	86
270-276	81
276-281	66
281-287	40
287-297	82
297-301	57
301-305	69
305-314	68
314-321	86
321-328	149
328-330	182
330-337	65
337-340	119
340-346	175
346-354	257
354-356	28
356-362	115
362-369	78
369-377	100
377-381	183
381-386	87

RAM HARDNESS DATA SHEET

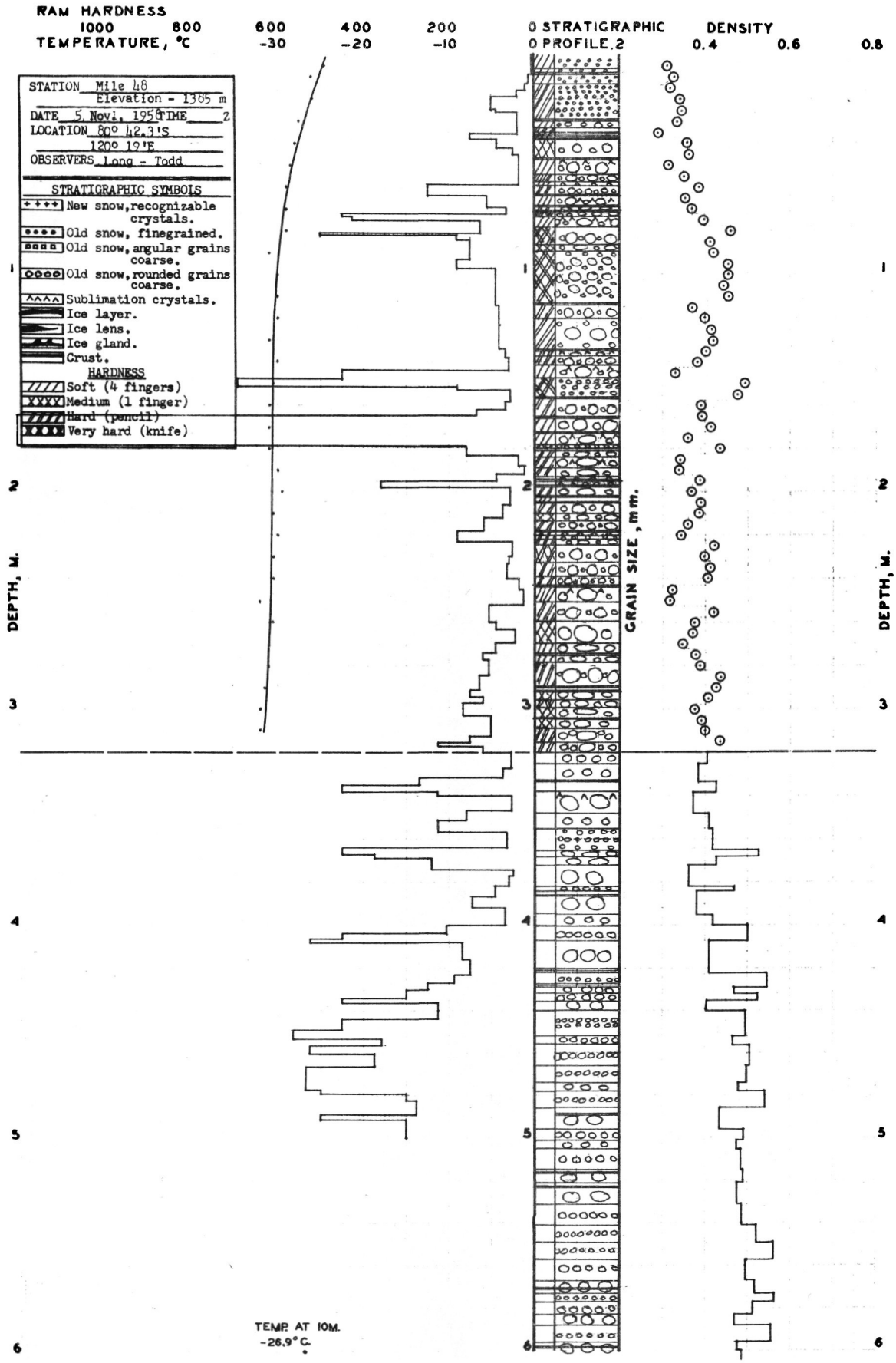
Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg
386-391	107
391-395	145
395-400	147
Mile 36	
4 November 1958	
1- 15	7
15- 21	35
21- 25	39
25- 30	50
30- 32	62
32- 41	19
41- 44	62
44- 55	25
55- 59	39
59- 66	44
66- 69	42
69- 74	37
74- 80	77
80- 84	48
84- 88	128
88- 91	281
91- 93	453
93- 95	138
95- 99	93
99-104	76
104-108	48
108-111	125
111-115	117
115-128	35
128-136	40
136-141	42
141-146	78
146-157	80
157-162	148
162-167	95
167-176	185
176-186	51
186-191	61
191-200	136
200-207	71
207-216	106
216-222	186
222-227	115
227-233	96
233-237	366
237-244	71
244-253	46
253-260	108
260-269	186
269-275	81
275-284	106
284-289	169
289-293	255
293-298	97
298-302	166
302-314	282
314-318	157
318-323	97
323-327	345
327-337	157
337-341	269
341-349	287
349-352	357
352-362	172
362-365	357
365-368	307
368-375	135
375-383	232
383-391	195
391-400	239
Mile 39	
4 November 1958	
1- 3	27
3- 8	24
8- 14	22
14- 18	32
18- 26	24
26- 29	32
29- 33	152
33- 38	74
38- 45	37
45- 50	52
50- 54	64
54- 69	102
69- 76	44
76- 81	123
81- 93	50
93- 97	123
97-100	95
100-106	95
106-109	185
109-119	33
119-125	140
125-134	105
134-137	245
137-140	125
140-166	230
166-176	33
176-180	118
180-182	906
182-188	506
188-192	196
192-201	56
201-209	62
209-222	177
222-229	134
229-244	156
244-248	268
248-254	231
254-261	284
261-270	256
270-276	281
276-281	277
281-288	221
288-295	435
295-302	242
302-315	147
315-321	232
321-326	277
326-330	307
330-332	307
332-337	397
337-345	282
345-353	645
353-360	264
360-369	174
369-374	247
374-380	157
380-388	232
388-396	345
396-398	532
398-400	532
Mile 42	
4 November 1958	
0- 3	19
3- 6	45
6- 12	27
12- 17	92

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
17- 23	77	360-370	157		
23- 28	62	370-377	136		
28- 30	62	377-387	207		
30- 36	22	387-395	232		
36- 37	212	395-400	307		
37- 42	202				
42- 44	177				
44- 46	77				
46- 56	27				
56- 71	82				
71- 74	330				
74- 77	365				
77- 81	95				
81-104	30				
104-115	45				
115-120	104				
120-139	25				
139-152	40				
152-161	55				
161-166	131				
166-175	105				
175-180	132				
180-188	96				
188-197	76				
197-204	108				
204-218	58				
218-224	96				
224-230	156				
230-236	156				
236-250	344				
250-255	79				
255-258	606				
258-261	656				
261-266	186				
266-275	81				
275-286	75				
286-295	189				
295-301	207				
301-309	119				
309-316	221				
316-319	357				
319-324	1007				
324-332	232				
332-340	176				
340-345	367				
345-353	325				
353-360	177				


RAM HARDNESS
1000 800
TEMPERATURE, °C
600 400 200
-30 -20 -10
0 STRATIGRAPHIC
0 PROFILE 2
DENSITY
0.4 0.6 0.8
STATION Mile 48
Elevation - 1385 m
DATE 5 Nov. 1958 TIME Z
LOCATION 80° 42.3'S
120° 19'E
OBSERVERS Long - Todd
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP. AT 10M.
-26.9°C.

IGY Byrd Traverse 1958-59

Station Mile 48

Date 5 November 1958

Observers Long, Todd

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 6	M	<.5	New snow
6- 8	S	<.5	
8- 9			Granular crust
9- 13	S	<.5	Softer than 6-8
13- 29	H	<1.0	
29- 30	S	.5-1.0	Drip grains
30- 33	M	.5-1.0	Drip grains
33- 35	S	1.0	
35- 37	H		Crust at 35 and 37 cm
37- 38	S	1.0	Very soft layer
38			Crust
38- 47	M	1.0-2.0	Drip grains
47			Granular crust
47- 54	S	1.0-3.0	Very loose, sublimation crystals, drip grains and crust
54- 57	H	1.0-2.5	
57- 59	S	2.0-3.0	Very loose, sublimation crystals
59- 63	H	1.0-1.5	
63			Crust
63- 64	H	1.0-1.5	
64			Crust
64- 68	S	1.0-3.0	Drip grains
68			Crust
68- 71	M	1.0-3.0	Drip grains, .5 cm lens in layer
71			Crust
71- 73	VH	1.0-1.5	
73- 78	S	2.0-4.0	Very loose, sublimation crystals
78- 86	VH	1.0-3.0	
86- 89	M	1.0-4.0	Loose texture, drip grains
89-113	VH	1.0-2.0	Drip grains
113-114	H	1.0-2.5	
114			Crust
114-120	H	1.0-3.0	
120-133	H	1.5-3.0	Harder than layer above
133-135	S	2.0-4.0	Loose, drip grains
135			Crust
135-138	H	2.0-4.0	
138-141	H	1.0-2.0	Harder than layer above
141-147	S	1.0-5.0	Loose, sublimation crystals
147-156	VH	1.0	Especially compact
156-157	H	1.0-2.0	Loose property
157			Crust
157-165	H	1.0-2.5	

Depth cm	Hardness	Grain Size, mm	Remarks
165			Crust
165-172	M	2.0-4.0	Drip grains
172-178	S	2.0-6.0	Loose, sublimation crystals
178-180	VH	1.0	
180-181	M	1.0-3.0	
181			Crust
181-184	M	1.0-4.0	Drip grains
184-189	S	2.0-5.0	Very soft and loose, sublimation crystals
189-193	S	1.0-4.0	
193-194	M	3.0-6.0	Loose, sublimation crystals
194-195			Granular crust
195-196	S		Sublimation crystals
196-197	VH		Lens of hard snow
197			Crust
197-202	M	2.0-4.0	
202			Crust
202-205	S	2.0-5.0	Drip grains, loose
205			Granular crust
205-210	H	1.0-3.0	
210-213	M	1.0-3.0	Drip grains
213-216	H	1.0-2.0	
216			Crust
216-220	S	2.0-5.0	Very soft layer, sublimation crystals
220-222	H	1.0-2.0	
222-224	VH	1.0-1.5	
224-233	M	1.0-3.0	Drip grains
233-239	H	1.0-3.0	Drip grains
239-243	H	1.0-3.0	Harder than layer above
243			Granular crust
243-250	S	3.0-6.0	Drip grains, loose, sublimation crystals
250-259	H	1.0-3.0	
259-269	M	2.0-5.0	Drip grains, loose
269-274	S	3.0-5.0	Loose
274-275	H	1.0-4.0	
275			Crust
275-278	S	2.0-5.0	Loose, drip grains
278-289	H	1.0-4.0	
289			Crust
289-291	H	2.0-4.0	
291			Crust
291-295	M	2.0-5.0	Many drip grains
295-299	VH	2.0-3.0	
299-304	M	2.0-6.0	Loose
304			Granular crust
304-308	M	2.0-4.0	Drip grains
308-315	H	2.0-5.0	
315-320	H	2.0-4.0	

IGY Byrd Traverse 1958-59

Station Mile 48

Date 5 November 1958

Observers Long, Todd

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
320-325	.406	L	L	
325-333	.384	L	L	
333-338	.428	L	L	Crust at top
338-348	.371	L	L	Very loose and very large, sublimation crystals top 2 cm
348-355	.408	L	M	
355-365	.417			2-4 cm loose, large, sublimation crystals; 4-10 cm L and L, crust at 1 cm
365-368	.523	D	S	
368-372	.424	L	L	
372-382	.359	L	L	Very loose and very large
382-384	.469	M	M	
384-395	.377	L	L	Very loose and very large, crust at 2 cm
395-400	.417	L	M	
400-407	.500	D	M	
407-422	.409	L	L	Crust at 15 cm
422-429	.549	D	S	Crust at 6 cm
429-432	.468	L	M	
432-435	.522			Top half loose and large; bottom half medium and small
435-440	.403	L	L	Very loose and very large
440-452	.496	D	S	
452-456	.467	M	M	
456-466	.503	D	M	
466-474	.496	D	M	
474-478	.479	L	M	
478-486	.541	D	S	
486-496	.438	L	L	Very loose and very large, crust at 3 cm
496-501	.491	M	M	
501-505	.475	L	M	
505-515	.484	M	M	
515-521	.490			0-1 cm medium and medium; 1-6 very loose and large; crust at 1 cm
521-531	.475	L	L	Crust at 1 cm
531-541	.486	M	M	
541-549	.521	D	S	
549-557	.560	D	S	
557-567	.497	M	M	
567-573	.517	L	L	Crust at 4 cm
573-577	.562	D	S	
577-583	.512	M	M	
583-588	.470	L	L	
588-596	.554	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
596-600	.477	L	L	Crust at 2 cm
600-607	.485	L	L	
607-617	.514	M	M	
617-622	.481	L	L	
622-628	.526	M	M	
628-633	.494	L	L	Very loose packing
633-639	.490	L	L	
639-645	.500	L	L	
645-655	.502	M	L	
655-665	.523	D	L	
665-675	.518	D	L	
675-685	.522	D	M	
685-694	.557	D	S	Crust at 7 cm
694-698	.510	L	M	
698-704	.455	L	L	Very large crystals
704-712	.580	D	S	Crust at 1 cm
712-716	.545	M	M	
716-721	.474	L	L	Very loose and very large
721-732	.511	M	L	
732-736	.535	L	L	
736-746	.517			0-1 cm loose and large; 1-4 cm dense and medium, crust at 1.5 cm; 4-10 cm loose and large
746-755	.664	D	S	Crust at 1 cm
755-760	.524	L	L	Crust at 3 cm
760-764	.608	D	M	
764-774	.527	M	L	
774-779	.534	L	M	
779-792	.506	L	L	
792-797	.518	L	L	Very large crystals
797-801	.547	M	L	
801-806	.565	M	M	
806-815	.522	L	L	Very large crystals
815-819	.546	M	M	
819-829	.529	M	M	
829-838	.583	D	S	Crust at 1 cm
838-845	.544	M	L	
845-855	.522	L	L	
855-860	.490	M	L	
860-866	.547	D	M	
866-874	.548	D	S	
874-878	.549	L	L	
878-887	.524	L	L	
887-897	.542	D	M	
897-907	.555	D	M	
907-917	.548	M	M	Crust at 2 cm

Depth cm	Density	Packing	Grain Size	Remarks
917-927	.554	M	L	
927-932	.565	M	L	Crust at 2 cm
932-942	.546	M	M	
942-951	.568	D	M	
951-958	.555	M	M	
958-971	.559	L	M	
971-981	.593	D	S	
981-991	.554	M	L	Very large crystals; crust at 3 cm
991-999	.538	L	L	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg
Mile 54	
6 November 1958	
0- 3	17
3- 8	32
8- 14	27
14- 17	35
17- 21	27
21- 25	32
25- 30	32
30- 32	52
32- 35	72
35- 38	152
38- 41	132
41- 43	107
43- 50	66
50- 53	102
53- 57	54
57- 62	37
62- 66	114
66- 73	145
73- 75	202
75- 81	62
81- 86	73
86- 91	303
91- 92	265
92- 96	73
96-100	95
100-105	60
105-113	49
113-118	114
118-121	65
121-127	65
127-133	50
133-138	95
138-143	131
143-148	95
148-152	231
152-158	155
158-162	95
162-171	205
171-176	366
176-180	344
180-182	231
182-185	96
185-188	126
188-193	186
193-197	118
197-199	96
199-202	306
202-208	421
208-214	1000+
214-218	268
218-223	156
223-236	86
236-241	306
241-247	381
247-253	381
253-257	231
257-262	126
262-272	306
272-280	231
280-284	382
284-292	467
292-296	269
296-302	257
302-310	137
310-314	307
314-318	569
318-324	332
324-330	257
330-338	287
338-343	247
343-345	532
345-348	457
348-354	532
354-357	507
357-362	757
362-366	720
366-370	307
370-374	419
374-381	557
381-386	247
386-390	495
390-398	268
398-400	905
Mile 60	
6 November 1958	
3- 13	6
13- 17	10
17- 19	52
19- 22	102
22- 26	62
26- 30	84
30- 32	152
32- 35	555
35- 38	84
38- 42	40
42- 45	34
45- 50	62
50- 56	44
56- 60	52
60- 65	32
65- 68	68
68- 75	109
75- 79	128
79- 82	215
82- 91	42
91- 97	135
97-100	165
100-106	171
106-110	141
110-118	65
118-127	80
127-128	253
128-131	185
131-139	50
139-143	95
143-150	45
150-157	45
157-161	95
161-167	170
167-171	185
171-175	186
175-179	141
179-184	186
184-190	276
190-195	276
195-197	186
197-200	156
200-211	37
211-215	118
215-222	71
222-228	66
228-236	64
236-243	135
243-247	165
247-254	126
254-256	51
256-260	388
260-266	506

RAM HARDNESS DATA SHEET

Station IGY Byrd Station 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg
266-268	306
268-274	81
274-279	186
279-287	176
287-296	72
296-303	136
303-310	115
310-316	157
316-323	221
323-330	327
330-333	207
333-344	116
344-350	82
350-355	157
355-361	232
361-367	207
367-373	257
373-377	345
377-382	142
382-392	172
392-397	307
397-400	357

Mile 66
6 November 1958

Depth cm	Hardness Number, Kg
2- 4	27
4- 8	37
8- 13	16
13- 16	72
16- 20	25
20- 23	35
23- 30	45
30- 37	45
37- 41	24
41- 43	92
43- 45	302
45- 47	252
47- 51	102
51- 57	70
57- 64	69
64- 71	44
71- 76	59
76- 81	24
81- 86	42
86- 89	155
89- 94	114
94- 96	320
96-106	50
106-112	50
112-118	125
118-128	33
128-132	50
132-135	155
135-140	455
140-142	320
142-146	95
146-151	42
151-158	325
158-162	230
162-168	230
168-171	335
171-177	381
177-177	Inf.
177-180	406
180-187	156
187-193	206
193-200	71
200-207	114
207-220	506
220-224	231
224-233	238
233-240	348
240-242	306
242-246	268
246-265	89
265-268	156
268-275	157
275-282	177
282-287	52
287-290	507
290-298	419
298-303	397
303-311	214
311-317	182
317-325	249
325-330	187
330-335	247
335-338	357
338-347	332
347-351	307
351-359	214
359-363	382
363-370	1000+
370-376	507
376-382	282
382-389	220
389-395	282
395-400	397

Mile 72
6 November 1958

Depth cm	Hardness Number, Kg
2- 15	7
15- 17	52
17- 22	98
22- 29	108
29- 38	75
38- 41	68
41- 48	31
48- 54	52
54- 60	211
60- 64	163
64- 69	77
69- 75	49
75- 81	80
81- 84	36
84- 88	95
88- 92	73
92-101	600
101-104	36
104-111	45
111-118	17
118-124	50
124-128	50
128-135	95
135-141	50
141-146	43
146-152	50
152-162	73
162-168	95
168-175	17
175-181	81
181-189	175
189-195	156
195-200	149
200-207	236
207-212	96
212-216	231
216-220	947
220-224	947
224-228	947
228-235	114

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg
235-242	48
242-247	96
247-255	118
255-263	286
263-268	96
268-276	100
276-281	126
281-288	199
288-293	186
293-301	232
301-310	82
310-314	157
314-322	467
322-330	249
330-338	82
338-341	307
341-346	1882
346-346	Inf.
346-348	3000+
348-349	1000+
349-353	269
353-360	177
360-365	307
365-375	577
375-380	457
380-385	157
385-394	174
394-400	182

Mile 78
6 November 1958

Depth cm	Hardness Number, Kg
2- 8	22
8- 10	102
10- 13	52
13- 18	37
18- 26	40
26- 31	32
31- 33	107
33- 35	152
35- 42	49
42- 48	37
48- 52	24
52- 57	26
57- 59	92
59- 63	47
63- 65	152
65- 70	502
70- 72	41
72- 77	42
77- 85	40
85- 94	17
94-105	46
105-110	243
110-118	71
118-128	63
128-132	164
132-135	185
135-140	185
140-147	45
147-156	35
156-162	50
162-169	70
169-176	57
176-180	118
180-185	115
185-190	115
190-197	84
197-202	24
202-209	224
209-216	160
216-223	71
223-228	148
228-236	64
236-242	276
242-246	96
246-253	132
253-257	231
257-260	606
260-263	1000+
263-269	206
269-279	186
279-283	118
283-288	68
288-293	97
293-300	264
300-310	142
310-318	119
318-326	287
326-331	247
331-337	207
337-341	269
341-348	177
348-354	132
354-365	123
365-373	214
373-378	217
378-388	322
388-395	199
395-400	217

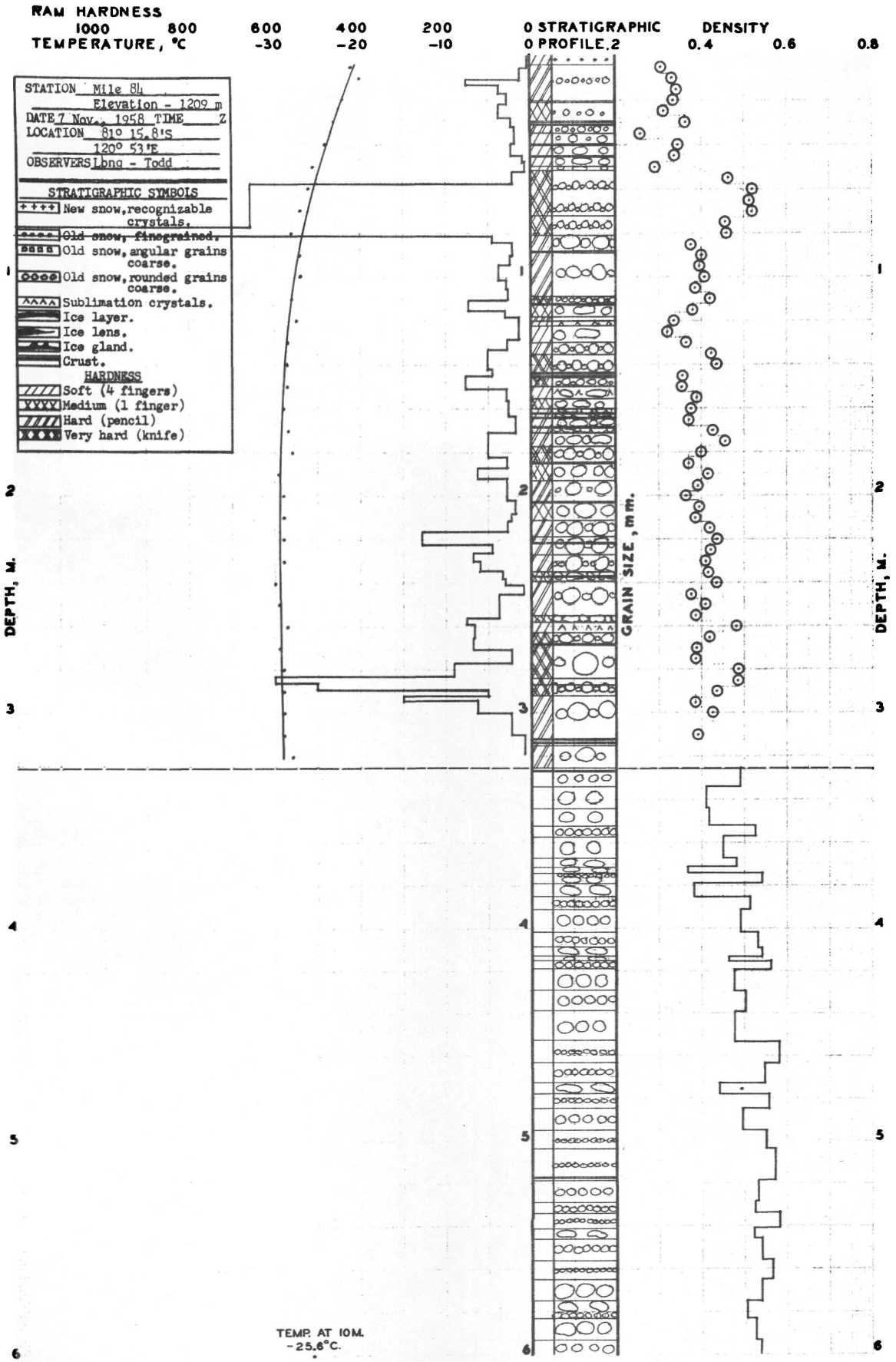
Mile 84
(Not at Pit)
6 November 1958

Depth cm	Hardness Number, Kg
1- 10	18
10- 13	52
13- 19	62
19- 21	77
21- 25	77
25- 29	62
29- 34	26
34- 41	36
41- 44	22
44- 48	24
48- 50	32
50- 52	252
52- 61	984
61- 65	91
65- 65	Inf.
65- 76	567
76- 79	254
79- 84	220
84- 86	143
86- 90	65
90- 95	53
95-100	41
100-107	48
107-115	47
115-123	35
123-125	125
125-127	50
127-131	87
131-133	65
133-137	80
137-141	87
141-146	59
146-151	77
151-155	80
155-162	35
162-168	47
168-174	45
174-176	95

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Todd

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
176-184	186				
184-186	186				
186-190	118				
190-196	36				
196-201	60				
201-206	60				
206-212	51				
212-215	206				
215-220	276				
220-225	131				
225-230	150				
230-234	96				
234-240	51				
240-244	74				
244-249	115				
249-257	108				
257-262	61				
262-267	168				
267-272	150				
272-278	51				
278-282	97				
282-284	457				
284-286	532				
286-289	157				
289-295	217				
295-301	67				
301-306	116				
306-313	97				
313-322	107				
322-330	119				
330-335	277				
335-338	97				
338-343	97				
343-350	136				
350-355	97				
355-359	142				
359-367	288				
367-373	307				
373-376	307				
376-380	947				
380-382	307				
382-388	132				
388-393	217				
393-395	457				
395-400	367				


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC
0 PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION Mile 84
Elevation - 1209 m
DATE 7 Nov., 1958 TIME Z
LOCATION 81° 15.8'S
120° 53'E
OBSERVERS Lbng - Todd
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP. AT 10M.
-25.6°C.

IGY Byrd Traverse 1958-59

Station Mile 84

Date 7 November 1958

Observers Long, Todd

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 4	S	<.5	Old snow
4- 21	H	.5-1.0	Old snow, crust at 21 cm
21			Crust
21- 31	M	.5-1.0	
30 & 31			Crusts
31- 35	H	1.0-2.0	Drip grains, round grains
35- 40	S	1.0-2.0	Drip grains
40			Granular crust
40- 45	S	2.0-3.0	Very soft, drip grains
45			Crust
45- 50	S	2.0-4.0	Drip grains
50- 52	S	2.0-4.0	Very soft
52- 72	VH	1.0-2.0	Very compact layer
72- 81	VH	1.0-2.0	
81- 88	H	2.0-5.0	Many drip grains
88			Granular crust
89-109	H	2.0-4.0	Many drip grains
109-112	VH	1.0-2.0	
112-118	M	2.0-5.0	Few drip grains
118-120	H	2.0-5.0	Many drip grains
120-122	S	2.0-6.0	Loose, sublimation crystals
122			Granular crust
122-128	S	3.0-6.0	Loose, sublimation crystals
128-131	S	2.0-5.0	Very soft, drip grains
131-135	H	1.0-3.0	Angular grains
135-146	VH	1.0-3.0	Few drip grains, angular and rounded grains
145			Crust
146			Crust
146-150	VH	1.0	Very compact lens on one side of tape
146-150	M	2.0-3.0	Layer in which lens occurs
150-155	S	3.0-7.0	Loose, sublimation crystals
155-160	M	2.0-3.0	
160-162	H	2.0-3.0	Angular grains
162			Granular crust
162-164	H	2.0-5.0	Many drip grains
164			Granular crust
164-168	H	2.0-5.0	Many drip grains
168			Granular crust
168-171	H	2.0-4.0	Many drip grains, harder than 164-168
171-177	H	2.0-4.0	Softer than 171-177, drip grains
177-185	VH	1.5-3.0	Angular grains
185			Crust
185-193	M	2.0-4.0	Many drip grains

Depth cm	Hardness	Grain Size	Remarks
193-203	H	1.0-4.0	
203			Crust
203-211	M	3.0-5.0	Many drip grains, rounded grains
211-219	H	2.0-4.0	
219-227	H	2.5-5.0	Harder than layer above, angular grains
222			Crust
227-235	H	1.0-5.0	Many drip grains
235-237	M	3.0-6.0	Many drip grains
237			Crust
237-239	M	2.0-5.0	Loose, many drip grains
239-255	H	2.0-4.0	Many drip grains
255-258	VH	2.0-4.0	Many drip grains
258-263	S		Loose, large sublimation crystals
263-268	VH	1.0-2.0	Angular grains
268			Granular crust
268-284	M	2.0-6.0	Loose
284-287	VH	1.0-2.0	
287-292	VH	1.0-3.0	Softer than layer above
292-315	H	2.0-5.0	Many drip grains
313			Crust
317			Crust
315-325	H	2.0-4.0	Loose, many drip grains

IGY Byrd Traverse 1958-59

Station Mile 84

Date 7 November 1958

Observers Long, Todd

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
325-334	.492			0-2 cm L and L; 2-9.5 cm M and M; granular crust at 1 cm
334-344	.411	L	L	Very loose and very large
344-352	.417	L	L	Very loose and very large, break at 3 cm
352-357	.526	D	M	
357-367	.450	L	L	
367-371	.481			0-2 cm M and M; 2-bottom L and L
371-374	.366	L	L	Very loose and very large
374-379	.541			0-3 cm D and S; 3-5 cm M and L
379-385	.380	L	L	Very loose and very large
385-391	.512	D	M	
391-402	.496	M	M	
402-409	.531	D	M	
409-413	.452	L	L	
413-415	.463	L	L	Very loose and very large
415-419	.541	D	M	
419-429	.475	M	L	
429-439	.502	M	M	
439-453	.479	M	L	
453-463	.568	D	S	
463-473	.548	D	M	
473-478	.442	L	L	Very loose and very large
478-485	.557	D	S	
485-495	.497	M	M	
495-504	.552	D	S	
504-519	.572	D	S	Crust at 14 cm
519-529	.533	M	M	
529-534	.527	D	M	
534-541	.583	D	S	
541-546	.523	L	L	
546-556	.540	D	M	
556-565	.566	D	S	
565-575	.540	M	L	
575-583	.506			0-6 cm L and L; 6-8 cm D and M
583-593	.527	M	L	
593-603	.538	M	M	
603-610	.617	D	S	
610-612	.497	L	L	Very loose
612-622	.538	D	M	
622-632	.517	M	L	
632-639	.540	M	L	
639-645	.535	L	L	Crust at top
645-653	.582	D	M	Crust at 0.5 cm

Depth cm	Density	Packing	Grain Size	Remarks
653- 661	.559	M	M	
661- 671	.563	M	M	Crust at 8 cm
671- 681	.589	D	S	
681- 691	.550	M	L	
691- 693	.500	L	L	
693- 703	.625	D	S	
703- 713	.609	D	M	
713- 725	.546	M	L	
725- 735	.607	D	S	
735- 745	.581	D	M	
745- 752	.580	D	M	
752- 762	.582			0-4 cm M and M; 4-9 cm D and M
762- 772	.578	D	M	
772- 781	.594	D	M	Crust at 4 cm
781- 786	.598	M	M	
786- 797	.559	D	S	
797- 803	.598	M	M	
803- 807	.640	M	L	
807- 817	.565	M	L	
817- 827	.581	M	M	
827- 832	.598	M	L	
832- 842	.594	D	M	
842- 852	.594	M	L	Crust at 3 cm
852- 857	.577	M	L	
857- 867	.630	D	S	
867- 877	.606	M	L	
877- 885	.597	M	M	
885- 891	.582	L	M	
891- 900	.602	D	M	
900- 909	.626	D	M	
909- 918	.609	M	L	Crust at 7 cm
918- 930	.608	M	M	
930- 939	.628	D	S	
939- 944	.607	M	L	
944- 954	.587	M	M	
954- 964	.613	D	S	
964- 974	.650	D	S	
974- 979	.649	M	M	
979- 985	.612	M	L	
985- 995	.616	D	M	
995-1006	.620	M	M	Crust at 4 cm

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 90	
8 November 1958	
1- 7	17
7- 12	42
12- 18	52
18- 22	39
22- 27	37
27- 33	42
33- 38	62
38- 41	32
41- 48	23
48- 50	182
50- 54	64
54- 60	69
60- 69	29
69- 73	77
73- 80	88
80- 84	65
84- 90	103
90- 96	95
96-104	95
104-110	125
110-120	95
120-128	72
128-136	50
136-144	28
144-149	130
149-151	455
151-155	720
155-159	125
159-163	80
163-170	133
170-174	193
174-178	455
178-186	286
186-190	494
190-194	156
194-202	62
202-213	75
213-217	118
217-224	133
224-232	213
232-236	118
236-240	156
240-248	306
248-252	194
252-260	118
260-272	81
272-277	96
277-280	407
280-284	82
284-298	82
298-302	157
302-306	195
306-317	157
317-324	49
324-328	82
328-333	217
333-339	132
339-343	119
343-347	157
347-356	57
356-360	82
360-367	222
367-374	392
374-380	82
380-391	239
391-400	124
Mile 96	
8 November 1958	
0- 3	35
3- 4	212
4- 10	52
10- 14	39
14- 20	62
20- 26	92
26- 30	70
30- 35	56
35- 43	14
43- 50	32
50- 55	26
55- 58	22
58- 62	152
62- 67	202
67- 69	319
69- 72	94
72- 75	94
75- 83	285
83- 87	49
87- 91	27
91- 95	49
95-100	65
100-108	40
108-111	67
111-116	113
116-121	43
121-128	78
128-141	33
141-147	65
147-155	28
155-163	40
163-168	95
168-175	197
175-180	61
180-187	59
187-192	293
192-196	186
196-204	74
204-209	43
209-215	201
215-222	71
222-231	46
231-240	176
240-243	96
243-251	51
251-256	79
256-262	156
262-266	118
266-270	74
270-276	81
276-283	84
283-290	97
290-295	80
295-302	72
302-308	97
308-316	87
316-320	75
320-326	187
326-331	132
331-334	67
334-340	67
340-347	148
347-354	134
354-365	106
365-369	144
369-375	82
375-380	97
380-383	127
383-390	110
390-393	127

RAM HARDNESS DATA SHEET

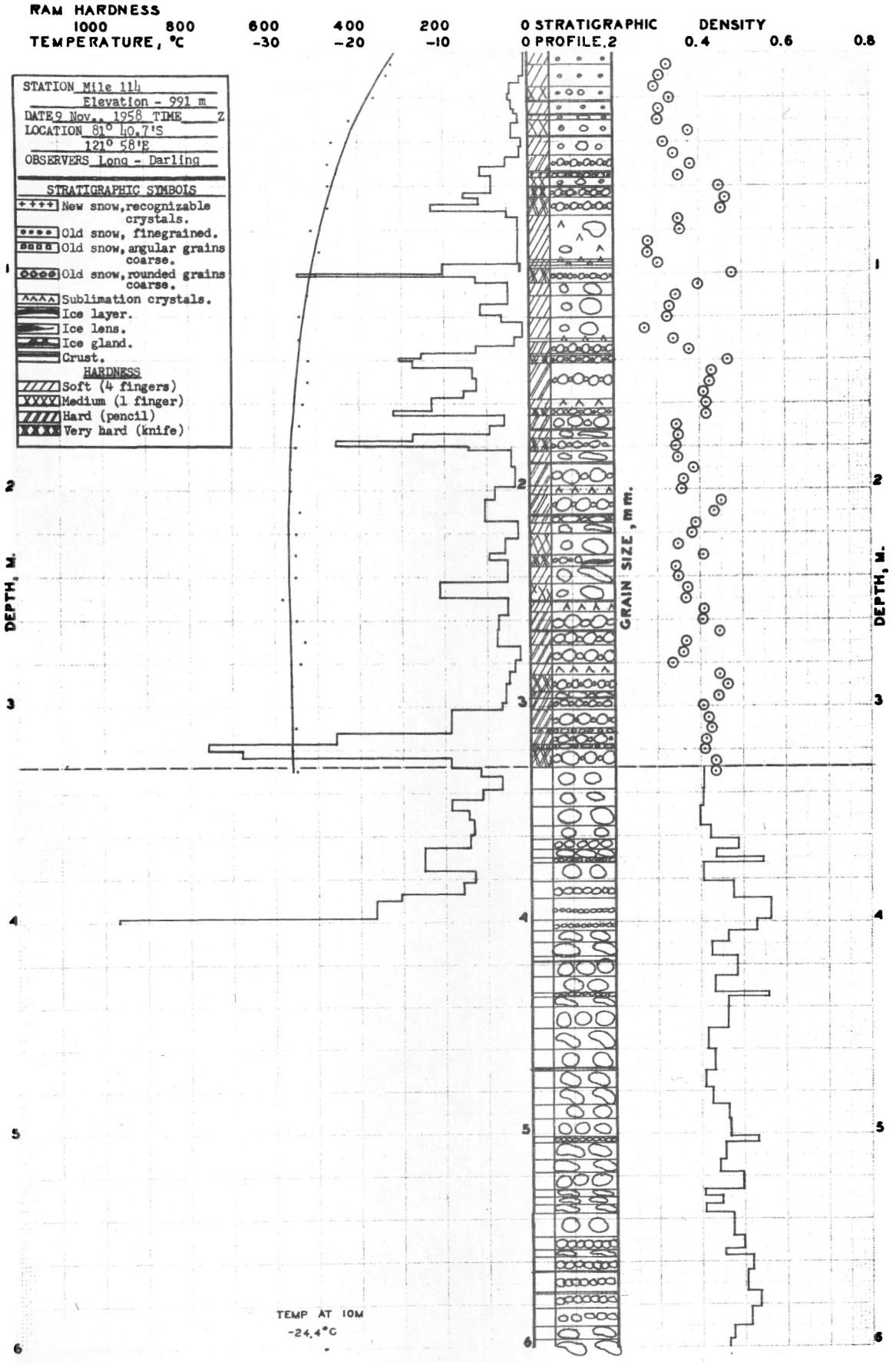
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
393-395	332
395-400	205
Mile 102	
8 November 1958	
0- 3	164
3- 5	94
5- 15	28
15- 19	94
19- 21	104
21- 26	417
26- 29	214
29- 31	454
31- 32	1000+
32- 38	579
38- 44	104
44- 49	64
49- 52	304
52- 58	204
58- 62	417
62- 68	379
68- 74	579
74- 78	304
78- 84	155
84- 86	230
86- 93	475
93-100	113
100-107	133
107-112	125
112-123	115
123-131	80
131-136	125
136-141	185
141-144	205
144-149	395
149-153	155
153-159	130
159-161	230
161-168	1000+
168-173	293
173-177	141
177-180	156
180-186	111
186-192	196
192-196	142
196-200	74
200-203	226
203-205	141
205-216	56
216-222	51
222-232	61
232-238	51
238-243	61
243-251	64
251-257	96
257-261	276
261-264	306
264-268	118
268-271	106
271-275	306
275-278	107
278-286	62
286-298	57
298-302	120
302-307	97
307-313	157
313-322	57
322-331	87
331-338	327
338-340	232
340-346	187
346-351	115
351-358	199
358-362	142
362-369	85
369-376	109
376-382	82
382-388	307
388-392	569
392-395	217
395-400	132
Mile 108	
8 November 1958	
3- 6	22
6- 15	30
15- 20	52
20- 25	56
25- 27	47
27- 33	62
33- 37	77
37- 41	77
41- 44	72
44- 50	34
50- 53	100
53- 58	42
58- 64	52
64- 68	27
68- 70	52
70- 74	90
74- 75	302
75- 78	65
78- 82	91
82- 86	128
86- 96	13
96-101	23
101-109	107
109-114	43
114-117	101
117-123	35
123-128	62
128-130	78
130-134	78
134-141	45
141-146	33
146-150	78
150-157	85
157-166	46
166-170	103
170-174	153
174-176	276
176-180	51
180-187	31
187-190	96
190-193	36
193-198	115
198-204	51
204-210	36
210-213	66
213-217	96
217-221	75
221-228	71
228-232	96
232-236	51
236-241	241
241-245	118
245-253	64
253-257	51
257-265	386
265-269	681
269-271	156

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
271-277	52				
277-282	62				
282-287	115				
287-292	240				
292-297	223				
297-301	165				
301-312	47				
312-319	47				
319-326	212				
326-329	97				
329-336	47				
336-339	67				
339-345	382				
345-349	569				
349-354	609				
354-358	195				
358-363	127				
363-367	232				
367-370	207				
370-376	107				
376-382	107				
382-387	97				
387-394	307				
394-400	307				


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC
0 PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 114
Elevation - 991 m
DATE 9 Nov., 1958 TIME Z
LOCATION 81° 40.7'S
121° 58'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 10M
-24.4°C

IGY Byrd Traverse 1958-59

Station Mile 114

Date 9 November 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
1- 7	S	.5 and less	Very soft, recent snow
7			Granular crust
7- 17	S	.5	
17- 22	S	.5- 1.0	
22			Granular crust
22- 28	S	.5	Harder than 17-22
28			No. 3 crust
28- 30	S	.5- 1.5	Softer than 22-28
30- 37	M	1.0- 1.5	
37			Granular crust
37- 46	S	1.0- 3.0	
46- 54	H	1.0- 2.0	
54			No. 3 crust
54- 56	H	1.0- 1.5	Harder than 46-54
56- 60	M	1.0- 1.5	
60			No. 2 crust
60- 65	VH	1.0- 2.0	
65- 73	VH	1.0- 2.0	Harder than 60-65
73- 93	S	2.0- 5.0	Loose; sublimation crystals
93- 94	M	3.0- 6.0	Sublimation crystals, cups and plates
94- 96	M	2.0-10.0	Loose; sublimation crystals, 10 mm drip grains
96- 97	S	2.0- 8.0	Many drip grains
97-104	VH	1.0- 1.5	
104-110	M	2.0- 4.0	Loose
110-120	S	2.0- 5.0	Loose
120-130	S	2.0- 5.0	Loose
130-131	S	3.0- 6.0	Very soft, loose; sublimation crystals
131-138	H	1.0- 3.0	
138			Granular crust
138-141	VH	1.0- 2.0	
141-158	H	1.0- 3.0	Angular grains present
158-162	M	2.0- 5.0	Many drip grains, sublimation crystals
162-165	VH	1.0- 2.0	
165-172	H	2.0- 4.0	Loose
172			No. 2 crust
172-176	S	3.0- 7.0	Loose, many drip grains
176-182	VH	1.0- 2.0	
182-187	S	2.0- 8.0	Loose
187			Granular crust
187-198	H	2.0- 5.0	Loose
198-202	S	3.0- 8.0	Loose

Depth cm	Hardness	Size, mm	Remarks
202-212	H	1.0- 5.0	
212			Granular crust
212-215	H	2.0- 5.0	Loose
215-220	S	2.0- 8.0	Loose
220-230	M	2.0- 6.0	Loose
230-235	VH	1.0- 3.0	Lens of very compact icy snow
235-243	S	3.0-10.0	Very loose
243-251	M	2.0- 5.0	Loose; Granular crust at 251
251-256	S	5.0-15.0	Sublimation crystals, cups and plates
256-265	H	2.0- 5.0	Loose
265			Granular crust
265-271	H	2.0- 4.0	Harder than 256-265
271-280	H	2.0- 5.0	Loose, softer than layer above
280-285	S	3.0- 8.0	Very loose; sublimation crystals
285-293	VH	1.0- 3.0	
293-296	H	2.0- 5.0	
296-301	VH	1.0- 2.0	Angular grains
301-310	H	1.0- 4.0	
310-312	VH	1.0- 2.0	Lens of compact snow
312-317	H	1.0- 4.0	
317-319	VH	1.0- 1.5	
319-328	VH	2.0- 4.0	

IGY Byrd Traverse 1958-59

Station Mile 114

Date 9 November 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
328-338	.407	L	L	
338-345	.406	L	L	
345-355	.398	L	L	Very large grains
355-361	.421	L	L	
361-366	.487	M	M	
366-370	.434	M	L	
370-372	.545	D	S	
372-381	.405	L	L	Break at 1.0 cm
381-389	.477	D	M	
389-399	.562	D	S	
399-404	.530	D	S	
404-409	.465	L	L	
409-416	.425	L	L	Very loose and very large
416-425	.483	M	L	No. 2 crust at 2.0 cm
425-433	.432	L	L	
433-435	.559	D	S	
435-437	.452	L	L	Very loose packing
437-440	.462	D	S	
440-450	.461	M	L	
450-460	.416	L	L	Very loose packing and very large grains
460-470	.431	L	L	Very large grains; No. 2 crust at 9.8 cm
470-478	.409	L	L	Very large grains
478-486	.424	L	L	Very loose and very large; break at 3.0 cm
486-493	.462	L	L	
493-501	.464	M	L	
501-504	.531	D	S	
504-512	.455	L	L	Very large grains
512-518	.441	L	L	Very loose and very large grains
518-526	.497	M	L	
526-529	.407	L	L	Very loose and very large grains
529-533	.447	L	L	
533-537	.407	L	L	Very loose and very large grains
537-548	.472	L	L	
548-554	.499	D	M	
554-557	.452	L	L	
557-564	.519	D	M	
564-574	.506	D	M	
574-581	.539	D	M	No. 2 crust at top
581-590	.516	M	M	
590-596	.473	L	L	Very loose packing
596-605	.467	L	L	Very loose and very large grains
605-615	.538	D	M	
615-620	.554	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
620-629	.509	L	L	
629-638	.492	L	L	
638-642	.525	M	L	
642-647	.571	D	M	
647-651	.505	L	L	
651-658	.556	D	M	
658-660	.473	L	L	Very large grains
660-668	.579	D	M	
668-672	.480	L	L	Very loose and very large grains
672-680	.538	M	L	
680-689	.549	D	L	
689-695	.545	D	L	
695-701	.561	D	M	
701-708	.548	M	L	
708-718	.550	D	M	
718-723	.579	D	M	
723-729	.540	M	L	
729-732	.583	D	M	
732-738	.549	M	L	
738-741	.558	L	L	
741-746	.567	M	M	
746-754	.572	D	M	No. 1 crust at 7.0 cm
754-757	.565	M	L	
757-767	.572	D	M	
767-770	.561	M	M	
770-780	.576	D	S	
780-790	.555	D	L	
790-792	.574	M	M	
792-798	.581	D	M	
798-808	.550	M	L	No. 1 crust at 6.0 cm
808-816	.539	L	L	Very large crystals; No. 2 crust at 4.5 cm
816-820	.570	M	L	
820-822	.599	M	M	
822-832	.558	M	L	
832-842	.557	M	L	
842-847	.583	M	M	
847-851	.560	M	L	
851-857	.591	D	M	
857-861	.539	L	L	
861-868	.568	M	M	Break at 1.0 cm
868-878	.564	M	L	
878-888	.590	D	M	
888-898	.598	D	M	
898-906	.586	D	M	
906-912	.554	D	L	No. 3 crust at 4.0 cm
912-922	.581	D	L	

Depth cm	Density	Packing	Grain Size	Remarks
922- 932	.610	D	M	
932- 937	.616	D	L	Melt ice on top; ice glands at 2.0 cm; No. 1 crust at 2.0 and 3.0 cm
937- 947	.578	D	M	
947- 957	.609	M	M	
957- 967	.594	M	L	
967- 977	.616	D	M	
977- 986	.613	D	M	Thin No. 3 crust at 8.0 cm
986- 996	.627	M	M	
996-1007	.602	D	M	Thin No. 3 crust at 5.0 cm
1007-1016	.600	M	L	
1016-1027	.606	M	M	No. 3 crust at 3.0 cm
1027-1032	.613	D	M	
1032-1038	.608	M	M	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 120	
10 November 1958	
3- 11	7
11- 14	12
14- 18	65
18- 21	86
21- 25	77
25- 28	82
28- 31	52
31- 37	32
37- 40	32
40- 42	122
42- 48	82
48- 52	77
52- 54	127
54- 59	252
59- 66	180
66- 68	402
68- 70	152
70- 71	202
71- 78	30
78- 82	40
82- 87	113
87- 91	53
91- 95	128
95- 98	70
98-109	53
109-113	45
113-118	255
118-121	95
121-125	72
125-131	35
131-137	39
137-145	24
145-153	43
153-155	80
155-160	167
160-164	28
164-169	41
169-176	66
176-181	156
181-190	156
190-196	36
196-200	74
200-201	276
201-205	141
205-211	66
211-215	51
215-222	32
222-229	58
229-234	79
234-237	366
237-243	118
243-249	36
249-254	61
254-261	96
261-266	96
266-271	43
271-280	156
280-285	80
285-290	222
290-296	52
296-301	62
301-305	210
305-309	572
309-312	277
312-315	277
315-319	255
319-322	97
322-327	97
327-331	145
331-337	112
337-346	97
346-351	97
351-354	97
354-361	72
361-364	187
364-369	242
369-375	202
375-379	232
379-385	142
385-397	165
397-400	187
Mile 126	
10 November 1958	
4- 15	13
15- 20	48
20- 22	32
22- 27	28
27- 32	20
32- 35	26
35- 38	42
38- 41	9
41- 44	16
44- 45	102
45- 47	242
47- 51	39
51- 56	20
56- 58	77
58- 66	28
66- 70	47
70- 77	32
77- 80	22
80- 83	152
83- 89	55
89- 91	69
91- 98	45
98-102	65
102-106	141
106-111	93
111-113	228
113-118	13
118-121	36
121-125	253
125-131	70
131-139	83
139-143	141
143-147	78
147-153	28
153-158	103
158-163	43
163-166	165
166-168	128
168-170	378
170-177	359
177-180	96
180-186	36
186-190	51
190-193	186
193-200	122
200-202	96
202-212	231
212-214	231
214-218	96
218-224	51
224-233	256
233-238	276
238-247	106
247-252	96
252-257	114

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
257-263	231
263-267	232
267-270	127
270-279	27
279-283	52
283-289	217
289-297	52
297-306	147
306-316	69
316-323	147
323-331	97
331-338	162
338-344	67
344-348	52
348-357	107
357-360	187
360-364	211
364-370	127
370-373	187
373-378	457
378-383	517
383-387	269
387-400	215

Mile 132
10 November 1958

Depth cm	Hardness Number, Kg
1- 5	22
5- 9	14
9- 11	17
11- 16	6
16- 18	7
18- 21	52
21- 25	190
25- 29	152
29- 33	130
33- 35	152
35- 39	92
39- 42	82
42- 45	52
45- 47	32
47- 51	92
51- 53	62
53- 58	38
58- 67	28
67- 72	80
72- 74	48
74- 80	27
80- 86	58
86- 92	48
92- 93	93
93- 99	18
99-109	9
109-111	18
111-115	40
115-122	20
122-125	23
125-127	228
127-132	253
132-141	141
141-146	103
146-151	23
151-155	28
155-158	70
158-162	153
162-164	253
164-166	130
166-169	125
169-174	114
174-179	74
179-189	68
189-192	154
192-202	231
202-204	276
204-210	186
210-213	66
213-225	81
225-229	164
229-231	96
231-235	298
235-237	231
237-245	176
245-249	186
249-254	131
254-260	381
260-269	421
269-272	156
272-276	157
276-280	119
280-289	222
289-295	82
295-299	195
299-305	82
305-311	132
311-320	241
320-325	127
325-332	135
332-336	232
336-342	182
342-345	407
345-350	487
350-352	307
352-357	97
357-362	397
362-367	157
367-370	107
370-373	457
373-379	632
379-381	382
381-390	139
390-395	247
395-400	127

Mile 138
10 November 1958

Depth cm	Hardness Number, Kg
1- 12	6
12- 23	3
23- 28	32
28- 33	26
33- 35	32
35- 37	306
37- 44	262
44- 47	52
47- 52	32
52- 58	18
58- 66	27
66- 72	212
72- 80	15
80- 86	19
86- 96	33
96- 99	118
99-109	18
109-112	36
112-117	153
117-120	68
120-126	61
126-130	33
130-136	109
136-139	215
139-143	128
143-149	103
149-155	70

RAM HARDNESS DATA SHEET

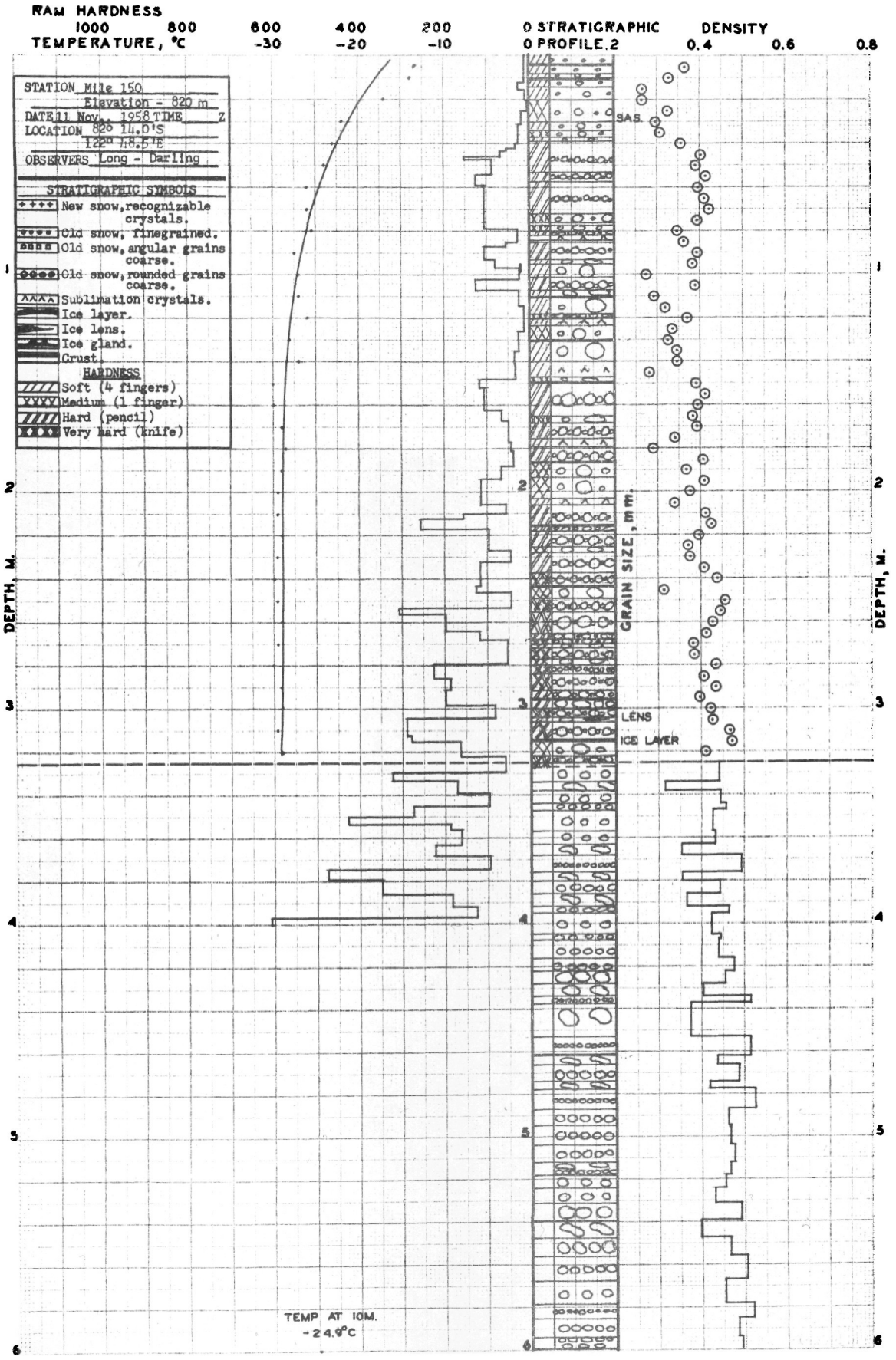
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Mile 144
10 November 1958

Depth cm	Hardness Number, Kg
155-164	48
164-168	313
168-172	153
172-176	91
176-182	104
182-185	104
185-189	141
189-197	29
197-202	168
202-209	46
209-214	79
214-220	186
220-229	256
229-233	142
233-237	96
237-244	19
244-247	126
247-250	126
250-257	46
257-262	348
262-266	96
266-270	51
270-275	115
275-283	299
283-286	457
286-287	187
287-292	62
292-294	457
294-296	672
296-301	577
301-305	119
305-313	62
313-317	194
317-324	71
324-329	127
329-336	134
336-347	212
347-352	307
352-360	119
360-370	307
370-378	287
378-383	277
383-391	325
391-394	407
394-397	307
397-400	107

Depth cm	Hardness Number, Kg
3- 12	13
12- 15	90
15- 20	104
20- 22	62
22- 26	24
26- 33	15
33- 40	15
40- 45	36
45- 47	62
47- 48	152
48- 52	62
52- 57	32
57- 66	39
66- 69	112
69- 72	62
72- 79	45
79- 84	63
84- 88	93
88- 90	48
90- 95	115
95-102	93
102-105	133
105-110	33
110-120	63
120-125	63
125-134	26
134-142	47
142-147	13
147-151	28
151-154	53
154-158	315
158-164	211
164-165	503
165-168	186
168-173	60
173-177	95
177-181	186
181-187	546
187-196	206
196-207	156
207-215	96
215-218	96
218-226	64
226-231	186

Depth cm	Hardness Number, Kg
231-235	118
235-241	68
241-249	84
249-254	224
254-259	168
259-267	63
267-269	231
269-272	246
272-278	81
278-282	74
282-288	112
288-291	157
291-297	382
297-304	327
304-307	307
307-313	157
313-315	277
315-318	157
318-324	97
324-330	277
330-336	157
336-341	117
341-344	247
344-350	142
350-352	322
352-355	487
355-360	205
360-366	382
366-374	382
374-379	457
379-383	277
383-387	457
387-391	277
391-398	199
398-400	502


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC
0 PROFILE 2
DENSITY
0.4 0.6 0.8
STATION Mile 150
Elevation - 820 m
DATE 11 Nov., 1958 TIME Z
LOCATION 826 14.0'S
122° 48.5'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS.
GRAIN SIZE, mm.
LENS
ICE LAYER
TEMP AT 10M.
-24.9°C
DEPTH, M.
1
2
3
4
5
6

IGY Byrd Traverse 1958-59

Station Mile 150

Date 11 November 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
1- 4	S	.5	
4			Thin granular crust
4- 8	S	.5	
8- 10	S	.5-1.0	Very soft
10			Thin granular crust
10- 14	S	.5-1.0	
14- 20	S	.5-1.0	Very soft; drip grains
20- 30	M	.5-1.0	
30- 34	S	.5-1.0	
34- 37	M		
37			Thin crust
37- 39	S	.5-1.0	Many drip grains
39- 72	H	.5-1.0	Appears homogenous
53- 57	H	.5-1.0	Layer within above zone but slightly harder
72- 76	M	1.0-3.0	Many drip grains
76- 77	H		Granular crust 1 cm thick
77- 80	M	1.0-3.0	
80			No. 2 crust
80- 82	H	1.0-2.0	
82- 84	S	2.0-4.0	Very soft and loose, sublimation crystals
83			No. 2 crust
84- 93	H	1.0-2.0	
93- 95	M	1.0-3.0	Loose, many drip grains
95-101	S	2.0-4.0	Very soft and loose
101-107	H	1.0-2.0	
107-110	S	2.0-5.0	Very soft and loose, many drip grains
110			No. 2 crust
110-118	S	1.0-5.0	Many drip grains, loose
118-120	VH	1.0-2.0	
120-123	S	2.0-6.0	Sublimation crystals, cup and plates; very soft and very loose
123-130	M	1.0-3.0	Angular grains
130			No. 3 crust
130-140	S	2.0-5.0	Very soft and loose
140-147		2.0-5.0	Very soft, loose; sublimation crystals
147-149	M	1.0-3.0	Many drip grains
149			No. 2 crust
149-165	H	2.0-5.0	Many drip grains
165-168	M	1.0-4.0	Loose, many drip grains
168-175	H	1.0-3.0	
175-179	S	3.0-8.0	Loose, sublimation crystals, plates and cups
179-187	H	1.0-3.0	

Depth cm	Hardness	Grain Size, mm	Remarks
187			No. 3 crust
187-193	M	1.0-4.0	Angular grains
193-203	M	1.0-3.0	Few drip grains, softer than layer above
203-206	S	2.0-5.0	Loose, sublimation crystals
206-216	H	1.0-2.0	Angular grains
216			No. 3 crust
216-218	H	1.0-2.5	Softer than 206-216
218-225	H	1.0-3.0	Few drip grains
225-228	M	2.0-4.0	Many drip grains
228-237	H	1.0-3.0	
237-243	VH	1.0-2.0	
243			No. 2 crust
243-249	M	2.0-4.0	Loose, many drip grains
249-255	VH	1.0-2.0	
255-265	VH	1.0-4.0	Softer than 249-255, many drip grains
265-268	H	2.0-4.0	Many drip grains
268-270	VH	1.0-2.0	
270-272	M	1.0-3.0	Loose
272-277	VH	1.0-2.0	
277-280	M	2.0-4.0	Loose
280-284	VH	1.0-1.5	Very compact and hard
284-291	VH	1.0-2.0	
291-295	H	1.0-3.0	
295			No. 3 crust
295-300	H	2.0-4.0	Loose
300-304	VH	1.0-2.0	
304-306	M	2.0-5.0	Lens of sublimation crystals
306-314	VH	1.0-3.0	
314			0.5 cm ice layer
314-315			Ice layer
315-316	M	1.0-3.0	
316-322	VH	1.0-3.0	Drip grains
322-327	S	2.0-4.0	Many drip grains, loose

IGY Byrd Traverse 1958-59

Station Mile 150

Date 11 November 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
327-334	.442	L	M	
334-338	.316	L	L	Very loose
338-344	.443	L	M	
344-347	.459	M	M	
347-357	.427	L	M	
357-363	.432	L	M	
363-368	.355	L	L	Very loose, core section broken and piece missing
368-376	.493	D	S	
376-380	.356	L	L	
380-386	.442	M	M	
386-392	.367	L	L	
392-395	.465	M	M	
395-405	.426	L	M	
405-407	.444	M	M	
407-416	.442	M	M	
416-422	.474	M	M	
422-428	.456	M	L	
428-434	.402	L	L	Break at 5.0 cm
434-437	.514	D	S	
437-453	.374	L	L	Very loose, core section broken
453-462	.515	D	S	
462-466	.437	L	L	No. 2 crust at top; break at 2.0 cm
466-474	.488	M	M	
474-477	.420	L	L	
477-487	.526	D	S	
487-495	.461	M	M	Loose zone 2.8-3.0 cm
495-504	.463	M	M	
504-512	.479	M	M	
512-518	.467			0-3 L and L; 3-6 D and M
518-524	.456	L	M	
524-531	.430	L	M	
531-539	.491	M	L	
539-547	.398	L	L	Very loose; break at 3.0 cm
547-556	.468	M	L	
556-567	.503	M	M	
567-578	.454	L	M	
578-585	.520	D	S	
585-594	.485	M	M	
594-599	.492			0-1 M and M; 1-4 L and M; 4-5.6 D and M
599-610	.507	D	M	
610-616	.513	D	S	
616-619	.513	D	S	

Depth cm	Density	Packing	Grain Size	
619-622	.565	D	S	
622-628	.510	M	M	
628-636	.535	D	M	
636-640	.486	M	M	
640-645	.561	D	S	
645-651	.545	M	M	
651-659	.487	M	M	
656-665	.544	D	S	D and M 3.8-4.2 cm
665-670	.529	D	M	
670-676	.502	M	M	
676-680	.545	D	M	
680-682	.537	D	S	
682-689	.486	L	L	Break at 3 cm
689-698	.515	D	M	
698-702	.496	M	M	
702-704	.540	D	M	
704-706	.565	M	M	
706-710	.535	M	M	
710-719	.542	D	M	
719-729	.544	D	S	No. 2 crust at 9.0 cm
729-734	.558	D	S	
734-736	.521	M	M	
736-741	.586	D	S	
741-746	.548	D	M	
746-750	.529	M	M	
750-752	.509	M	L	
752-757	.551	D	S	
757-760	.524	L	L	
760-769	.549	D	M	
769-772	.560	D	S	No. 3 crust at 2.0 cm
772-779	.594	D	S	
779-782	.580	D	M	
782-791	.532	M	M	Break at 2.0 cm
791-802	.554	D	M	
802-806	.548			0-2 M and M; 2-4 D and M
806-811	.551	M	M	
811-813	.551	M	L	
813-823	.550	D	M	
823-830	.570	D	S	
830-838	.548	D	M	
838-843	.546			0-1.5 M and M; 1.5-3.0 L and L; 3.0-4.8 D and M
843-846	.584	D	M	
846-854	.520	M	L	
854-860	.525	M	M	
860-870	.555	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
876- 878	.567	D	M	
878- 881	.541	M	M	
881- 887	.514	M	M	Break at 2.0 cm
887- 893	.534	M	L	
893- 902	.539	M	M	
902- 911	.561	D	M	
911- 915	.541	M	L	
915- 922	.568	D	S	
922- 927	.565	D	M	
927- 933	.557	M	M	
933- 939	.565	D	M	
939- 942	.556	M	L	
942- 946	.573	M	M	
946- 948	.605	D	S	
948- 958	.581	D	M	
958- 969	.585	D	M	
969- 977	.597	D	M	
977- 981	.555	M	M	
981- 986	.567	M	L	
986- 996	.607	D	S	
996-1002	.583	M	M	
1002-1004	.509	L	L	
1004-1012	.601	D	M	
1012-1019	.570	M	M	
1019-1024	.571			3-5 M and L; 0-3 M and M
1024-1031	.582	M	M	
1031-1042	.544	M	L	Break at 8.0 cm
1042-1052	.600	D	M	
1052-1060	.607	D	M	No. 3 crust at 6.0 cm
1060-1064	.599	M	M	
1064-1068	.570	L	L	
1068-1075	.583	M	M	
1075-1084	.589	D	M	
1084-1096	.601	D	M	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 156	
12 November 1958	
1- 6	34
6- 17	25
17- 20	35
20- 27	16
27- 32	22
32- 36	17
36- 39	30
39- 41	22
41- 46	4
46- 48	42
48- 51	162
51- 60	35
60- 64	32
64- 68	24
68- 74	127
74- 78	100
78- 84	43
84- 93	50
93- 96	73
96-100	48
100-103	113
103-107	33
107-110	83
110-119	53
119-126	11
126-132	10
132-141	25
141-148	11
148-150	153
150-158	78
158-162	315
162-164	185
164-172	50
172-181	46
181-185	51
185-194	256
194-197	186
197-200	96
200-210	51
210-215	24
215-226	128
226-230	118
230-238	96
238-247	96
247-251	96
251-255	51
255-261	756
261-266	306
266-270	156
270-279	56
279-287	63
287-295	119
295-304	157
304-311	157
311-315	119
315-325	172
325-330	97
330-337	115
337-341	82
341-345	269
345-355	307
355-362	199
362-367	187
367-373	182
373-378	97
378-382	82
382-394	319
394-400	257
Mile 162	
12 November 1958	
2- 5	90
5- 6	72
6- 11	26
11- 16	11
16- 18	27
18- 23	52
23- 26	25
26- 31	26
31- 34	52
34- 40	67
40- 45	32
45- 48	142
48- 50	62
50- 68	30
68- 73	39
73- 76	108
76- 82	43
82- 86	33
86- 89	153
89- 91	128
91- 97	53
97-101	31
101-108	68
108-111	153
111-118	33
118-120	153
120-123	103
123-131	15
131-143	45
143-149	28
149-155	13
155-164	53
164-168	128
168-179	48
179-184	64
184-189	64
189-200	91
200-204	104
204-207	156
207-215	29
215-219	73
219-224	115
224-235	96
235-248	181
248-255	223
255-258	212
258-266	62
266-269	126
269-271	367
271-273	307
273-277	119
277-287	97
287-292	127
292-306	122
306-313	72
313-323	217
323-332	90
332-340	82
340-352	319
352-358	232
358-361	307
361-364	207
364-381	87
381-387	232
387-400	194

RAM HARDNESS DATA SHEET

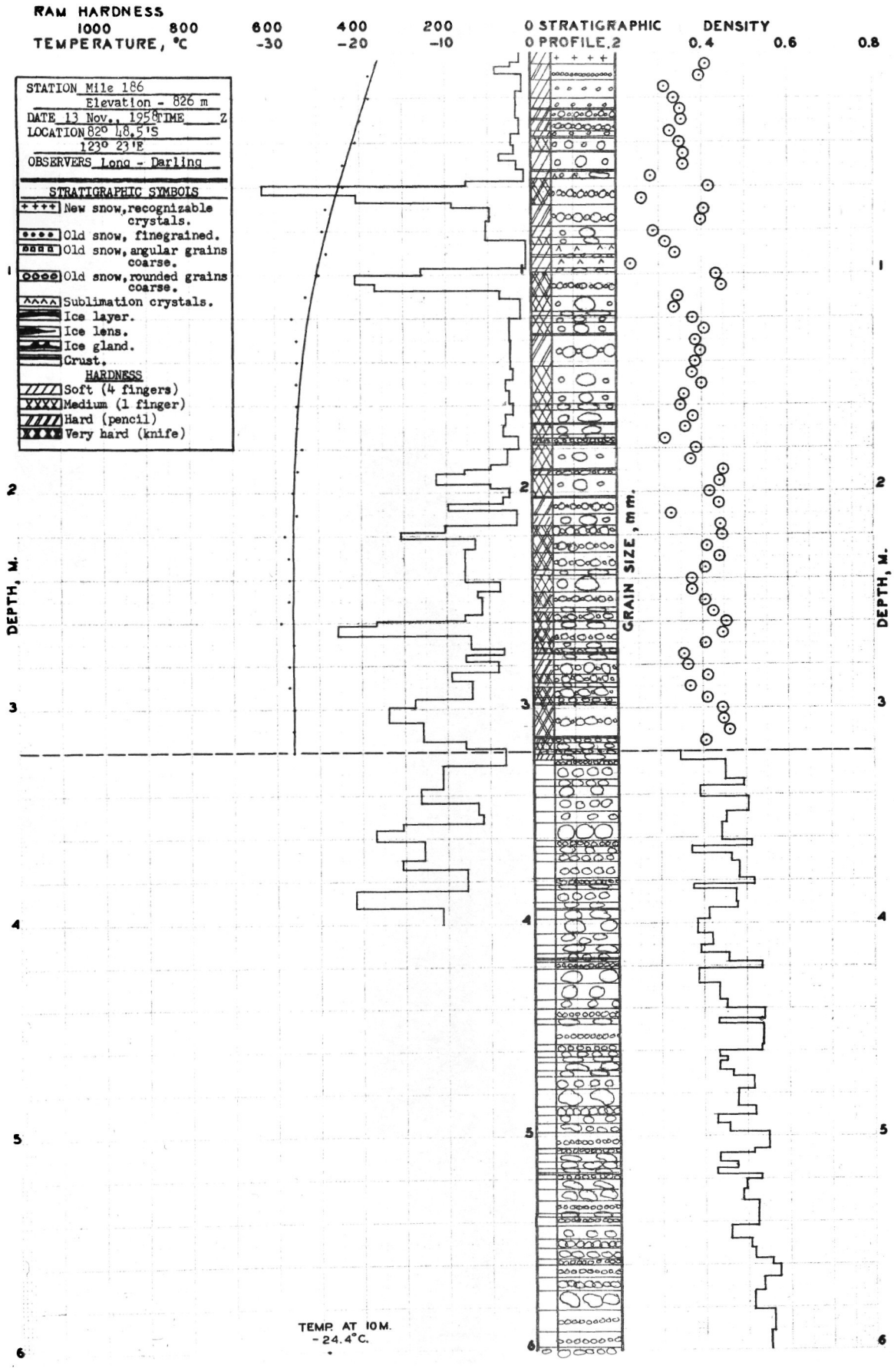
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 168	
12 November 1958	
3- 12	8
12- 15	66
15- 21	12
21- 27	9
27- 32	52
32- 35	32
35- 40	8
40- 41	102
41- 43	380
43- 46	412
46- 48	177
48- 53	62
53- 68	62
68- 70	627
70- 72	627
72- 75	755
75- 77	592
77- 81	140
81- 96	30
96-100	50
100-117	19
117-138	23
138-145	45
145-166	32
166-170	117
170-174	276
174-179	79
179-186	32
186-195	136
195-198	126
198-206	51
206-215	126
215-222	96
222-233	109
233-237	45
237-247	96
247-254	326
254-258	141
258-263	79
263-271	73
271-276	205
276-287	114
287-293	64
293-297	72
297-303	187
303-309	157
309-314	367
314-320	97
320-326	82
326-333	174
333-338	132
338-346	199
346-349	427
349-356	199
356-360	97
360-368	165
368-381	56
381-385	255
385-391	157
391-400	197
Mile 174	
12 November 1958	
0- 9	35
9- 11	62
11- 17	9
17- 26	3
26- 30	17
30- 35	22
35- 37	52
37- 47	56
47- 54	66
54- 61	54
61- 67	82
67- 72	62
72- 75	35
75- 80	33
80- 94	85
94-102	31
102-104	53
104-106	303
106-109	95
109-118	15
118-130	21
130-139	25
139-145	50
145-154	65
154-157	65
157-169	73
169-175	51
175-181	186
181-184	68
184-192	51
192-198	66
198-201	66
201-208	326
208-212	96
212-223	73
223-229	96
229-237	109
237-243	156
243-250	71
250-257	71
257-261	141
261-271	61
271-277	82
277-282	79
282-286	232
286-290	322
290-298	63
298-304	112
304-308	97
308-314	172
314-319	132
319-322	337
322-330	475
330-333	307
333-339	132
339-348	123
348-356	214
356-363	264
363-373	285
373-379	132
379-385	107
385-396	288
396-400	382
Mile 181	
12 November 1958	
3- 15	9
15- 22	16
22- 28	32
28- 29	152
29- 32	302
32- 34	127
34- 41	234
41- 44	68
44- 52	35
52- 56	64

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
56- 63	30	350-354	232		
63- 71	40	354-362	176		
71- 79	27	362-367	307		
79- 86	45	367-375	382		
86- 91	13	375-386	197		
91- 96	63	386-391	427		
96-101	23	391-400	191		
101-103	78				
103-111	14				
111-118	153				
118-124	45				
124-134	28				
134-146	32				
146-151	73				
151-156	203				
156-163	81				
163-174	208				
174-179	79				
179-187	86				
187-191	569				
191-194	306				
194-199	186				
199-205	126				
205-210	222				
210-217	326				
217-219	141				
219-226	58				
226-235	136				
235-241	111				
241-245	118				
245-249	141				
249-254	61				
254-262	198				
262-268	111				
268-273	186				
273-277	96				
277-284	97				
284-290	127				
290-296	172				
296-303	149				
303-308	152				
308-314	382				
314-322	287				
322-332	132				
332-338	127				
338-342	560				
342-350	471				


RAM HARDNESS
1000
800
600
400
200
TEMPERATURE, °C
-30
-20
-10
0 STRATIGRAPHIC
0 PROFILE.2
DENSITY
0.4
0.6
0.8
STATION Mile 186
Elevation - 826 m
DATE 13 Nov., 1958 TIME Z
LOCATION 82° 48.5'S
123° 23'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
DEPTH, M.
TEMP. AT 10M.
-24.4°C.

IGY Byrd Traverse 1958-59

Station Mile 186

Date 13 November 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 5			
5			Granular crust
5- 12	H	.5	
12- 20	S	.5	Very soft layer
20- 25	S	.5	
25			Thin granular crust
25- 29	H	.5-1.0	
29			Thin granular crust
29- 35	H	.5-1.0	
35- 37	S	.5-1.0	Very soft layer
37- 38	VH		Granular crust
38- 44	M	1.0-1.5	Drip grains
44			Granular crust
44- 53	S	1.0-3.0	
53			Granular crust
53- 56	S	1.0-4.0	Very soft and loose, many drip grains
56- 68	VH	1.0-1.5	
68- 78	H	1.0-2.0	Angular grains
78- 83	S	1.0-4.0	Very soft, drip grains
83- 86	M	1.0-3.0	Loose
86- 91	S	1.0-5.0	Very soft and loose; sublimation crystals, cups and plates
91- 92	H	1.0-3.0	
92- 97	S	3.0-6.0	Very soft and loose; sublimation crystals, plates
97- 99	M	1.0-3.0	
99-110	VH	1.0-1.5	
110-117	M	1.0-5.0	Many drip grains
117-119	S	2.0-5.0	Drip grains; loose
119-122	M	1.0-3.0	
122-127	M	1.0-3.0	
127			Granular crust
127-142	H	1.0-3.0	Angular grains
142-154	M	1.0-4.0	
154-159	M	1.0-3.0	
159-162	M	2.0-5.0	Loose
162-168	M	2.0-5.0	Loose
168			Granular crust
168-173	M	2.0-4.0	Loose, grip grains
173-175	S	2.0-5.0	Loose
175-177	VH	1.0-2.0	
177-178	S	2.0-7.0	Very loose, sublimation crystals
178-190	M	1.0-3.0	Drip grains
190			Granular crust

Depth cm	Hardness	Grain Size, mm	Remarks
190-192	H	1.0-2.0	
192-202	M	1.0-3.0	Drip grains
203			Thin granular crust
202-210	H	1.0-2.0	
210-215	S	2.0-5.0	Loose
215-220	VH	1.0-1.5	
220-228	VH	1.0-2.0	
228-236	VH	1.0-2.0	
236-238	S	1.0-4.0	Loose, drip grains
238-246	M	2.0-6.0	Drip grains
246-253	VH	.5-1.5	
253-255	S	2.0-5.0	Loose
255-259	VH	1.0-2.0	
259-263	M	2.0-4.0	Loose
263-269	VH	1.0-2.0	
269-272	M	1.0-3.0	
272-274	VH	.5-1.5	
274			Icy crust
274-277	S	2.0-5.0	Loose
277-284	H	1.0-3.0	
284-288	VH	1.0-2.0	
288-290	S	2.0-3.0	Loose
290-295	S	1.0-3.0	
295-297	VH	1.0-2.0	
297-298	S	1.0-4.0	Loose
298-313	VH	1.0-3.0	
313-314	M	1.0-3.0	Loose
314-316	VH	1.0-2.0	
316-319	M	2.0-4.0	
319-321	VH	1.0-3.0	Very compact layer
321-325	S	2.0-6.0	Loose

IGY Byrd Traverse 1958-59

Station Mile 186

Date 13 November 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
320-324		D	S	Badly broken, no density
324-333	.450	M	M	
333-336	.496	M	M	
336-341	.391	L	L	
341-348	.502	M	M	
348-353	.452	L	M	
353-361	.441	M	L	
361-364	.511	D	S	
364-367	.371	L	M	
367-371	.464	M	M	
371-379	.482	M	M	
379-382	.517	D	S	
382-384	.377	L	L	
384-390	.477	M	M	
390-393	.479	L	M	No. 2 crust at 2.5 cm
393-398	.411	L	L	
398-405	.384	L	L	Very loose packing
405-410	.420			0-2 cm L and M; 2-4 cm M and M
410-414	.392	L	L	
414-418	.458			0-1.5 M and M; 1.5-2.5 L and M; 2.5-3.5 M and M; No. 3 crust at 2.5 cm
418-421	.534	D	S	
421-428	.389	L	L	Very loose packing
428-436	.436	L	L	
436-440	.452	L	M	
440-445	.540	D	S	
445-447	.433	L	L	
447-457	.537	D	S	
457-460	.535	M	S	
460-463	.436	M	M	
463-465	.452	L	L	
465-469	.436	L	L	Very loose packing
469-472	.468	L	L	
472-478	.516	M	M	
478-486	.479	M	L	
486-490	.520	D	M	
490-494	.428	L	M	
494-498	.458			0-2 cm L and L; 2-4 cm D and M
498-506	.550	D	S	
506-508	.515	D	S	
508-512	.433	L	L	
512-515	.476	M	L	
515-518	.429	L	L	No. 2 crust at 2.0 cm

Depth cm	Density	Packing	Grain Size	Remarks
518-520	.531	D	M	
520-525	.497	L	L	
525-530	.490	M	L	
530-542	.523	D	S	6.5-7.0 L and L zone with break
542-548	.460	L	M	
548-552	.509	D	M	
552-557	.517	M	M	
557-560	.555	D	S	
560-566	.571	D	S	
566-572	.535	D	M	
572-581	.512	M	L	
581-591	.559	D	S	
591-599	.555	D	S	
599-605	.531	M	M	
605-611	.496	L	L	
611-618	.478	L	L	
618-622	.535	M	M	
622-627	.502	L	L	
627-632	.501			0-3 cm M and M; 3-5.5 cm M and L; No. 2 crust at 3.0 cm
632-637	.632	D	M	
637-648	.637	D	M	
648-653	.561	D	M	No. 1 crust at 4.0 cm
653-655	.540	M	M	
655-661	.484	L	L	
661-670	.561	D	M	No. 2 crust at 0.5 cm
670-675	.522			0-1.5 cm M and M; 1.5-5.2 cm M and L
675-680	.533	M	M	
680-684	.525	M	L	Break at 3.0 cm
684-693	.562	D	M	
693-700	.562	D	M	
700-705	.543	M	M	
705-714	.542	M	L	
714-719	.544	M	M	
719-725	.573			0-2 cm D and S; 2.0-5.4 cm D and M
725-732	.557	M	M	
732-735	.532	L	L	
735-738	.597	D	M	
738-748	.581	D	S	
748-753	.598	D	M	
753-758	.544	M	L	
758-764	.526	M	L	
764-770	.518	L	L	
770-776	.556	M	M	
776-787	.558	M	M	
787-791	.531	M	L	

Depth cm	Density	Packing	Grain Size	Remarks
791- 799	.566	M	M	
799- 805	.517	M	L	
805- 812	.570	D	S	
812- 817	.567	M	M	
817- 826	.522	L	L	Break at 4.0 cm
826- 833	.586	D	M	No. 1 crust at 3.0 cm
833- 840	.567	M	L	
840- 845	.541	M	L	
845- 849	.565	M	M	
849- 859	.567	M	M	
859- 869	.577	D	M	
869- 877	.603	D	S	
877- 880	.561	M	L	
880- 882	.624	D	S	No. 3 crust at 0.5 cm
882- 889	.567	M	M	
889- 896	.604	D	S	No. 2 crust at 1.5 cm
896- 900	.588	D	S	
900- 903	.582	M	L	
903- 911	.585	D	S	
911- 916	.574	D	M	
916- 925	.562	M	M	
925- 930	.574	M	M	
930- 932	.527	M	L	
932- 942	.587	D	M	
942- 946	.592	D	S	
946- 950	.557	M	L	
950- 957	.563	M	M	
957- 960	.569	M	L	
960- 970	.611	D	S	
970- 977	.590	D	M	
977- 980	.607	M	L	
980- 989	.574	M	M	
989- 999	.591	D	M	
999-1004	.577	M	M	
1004-1011	.609	D	S	
1011-1016	.577	M	M	
1016-1022	.588	D	M	
1022-1028	.593	M	L	No. 2 crust at 1.5 cm
1028-1031	.597	D	M	
1031-1039	.580	M	L	
1039-1043	.605	D	M	
1043-1048	.580	D	L	
1048-1051	.620	M	M	
1051-1056	.595	M	L	
1056-1066	.583	D	L	
1066-1071	.588	M	M	
1071-1084	.583	D	M	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 192	
14 November 1958	
3- 5	32
5- 9	65
9- 12	60
12- 18	9
18- 21	25
21- 33	127
33- 39	134
39- 44	52
44- 54	67
54- 61	52
61- 65	15
65- 68	252
68- 76	566
76- 78	229
78- 84	79
84- 87	67
87- 95	41
95-102	45
102-106	25
106-109	65
109-121	13
121-135	38
135-137	95
137-143	20
143-149	70
149-156	33
156-163	111
163-166	55
166-174	27
174-179	54
179-192	43
192-197	128
197-203	41
203-214	92
214-218	43
218-223	156
223-226	126
226-238	131
238-249	208
249-255	66
255-257	96
257-260	186
260-265	115
265-275	219
275-282	123
282-288	157
288-298	169
298-304	82
304-310	332
310-315	116
315-321	157
321-327	202
327-334	284
334-342	120
342-346	232
346-350	307
350-355	355
355-360	187
360-368	157
368-380	207
380-389	292
389-396	157
396-400	457
Mile 198	
14 November 1958	
1- 9	39
9- 12	19
12- 15	15
15- 19	17
19- 24	152
24- 26	194
26- 30	47
30- 38	17
38- 42	39
42- 48	27
48- 51	72
51- 55	84
55- 65	23
65- 70	32
70- 74	48
74- 75	303
75- 79	315
79- 86	60
86- 92	61
92-101	96
101-112	29
112-115	153
115-123	285
123-127	118
127-137	43
137-142	24
142-153	73
153-159	130
159-167	185
167-176	75
176-181	61
181-189	118
189-198	66
198-205	46
205-213	86
213-223	231
223-232	106
232-238	111
238-242	569
242-245	756
245-254	374
254-261	70
261-265	119
265-274	506
274-284	127
284-293	67
293-299	132
299-304	187
304-312	232
312-319	135
319-323	185
323-328	127
328-334	632
334-339	196
339-345	257
345-353	477
353-359	282
359-366	157
366-371	217
371-375	157
375-380	607
380-388	269
388-400	319
Mile 204	
14 November 1958	
3- 13	6
13- 15	127
15- 17	452
17- 24	23
24- 31	36
31- 36	74
36- 39	122

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
39- 48	75
48- 54	77
54- 59	62
59- 62	102
62- 74	27
74- 82	37
82- 84	153
84- 90	211
90- 93	303
93- 98	123
98-103	143
103-107	128
107-111	142
111-118	57
118-129	38
129-136	57
136-143	19
143-148	42
148-153	23
153-165	98
165-176	103
176-182	66
182-192	96
192-197	61
197-203	96
203-206	126
206-216	68
216-223	58
223-230	135
230-238	288
238-245	326
245-250	366
250-257	71
257-264	212
264-272	107
272-280	175
280-289	167
289-290	632
290-295	457
295-299	277
299-309	89
309-313	389
313-322	137
322-329	327
329-337	682
337-349	307
349-353	157
353-358	187
358-368	287
368-372	157
372-381	391
381-391	172
391-400	257

Mile 210
14 November 1958

Depth cm	Hardness Number, Kg
0- 4	127
4- 10	212
10- 16	212
16- 21	252
21- 26	252
26- 31	252
31- 37	212
37- 42	82
42- 62	64
62- 65	102
65- 70	142
70- 76	46
76- 79	53
79- 81	253
81- 84	455
84- 89	95
89- 94	113
94-105	85
105-117	27
117-125	27
125-129	50
129-140	21
140-149	135
149-156	107
156-160	164
160-166	50
166-170	96
170-177	45
177-185	41
185-194	146
194-205	156
205-213	74
213-218	24
218-227	126
227-232	96
232-236	165
236-245	76
245-250	186
250-255	204
255-261	36
261-267	186
267-271	569
271-275	187
275-281	112
281-288	59
288-297	505
297-307	517
307-316	57
316-323	242
323-332	190
332-341	139
341-347	157
347-352	307
352-357	427
357-374	234
374-385	425
385-391	357
391-400	239

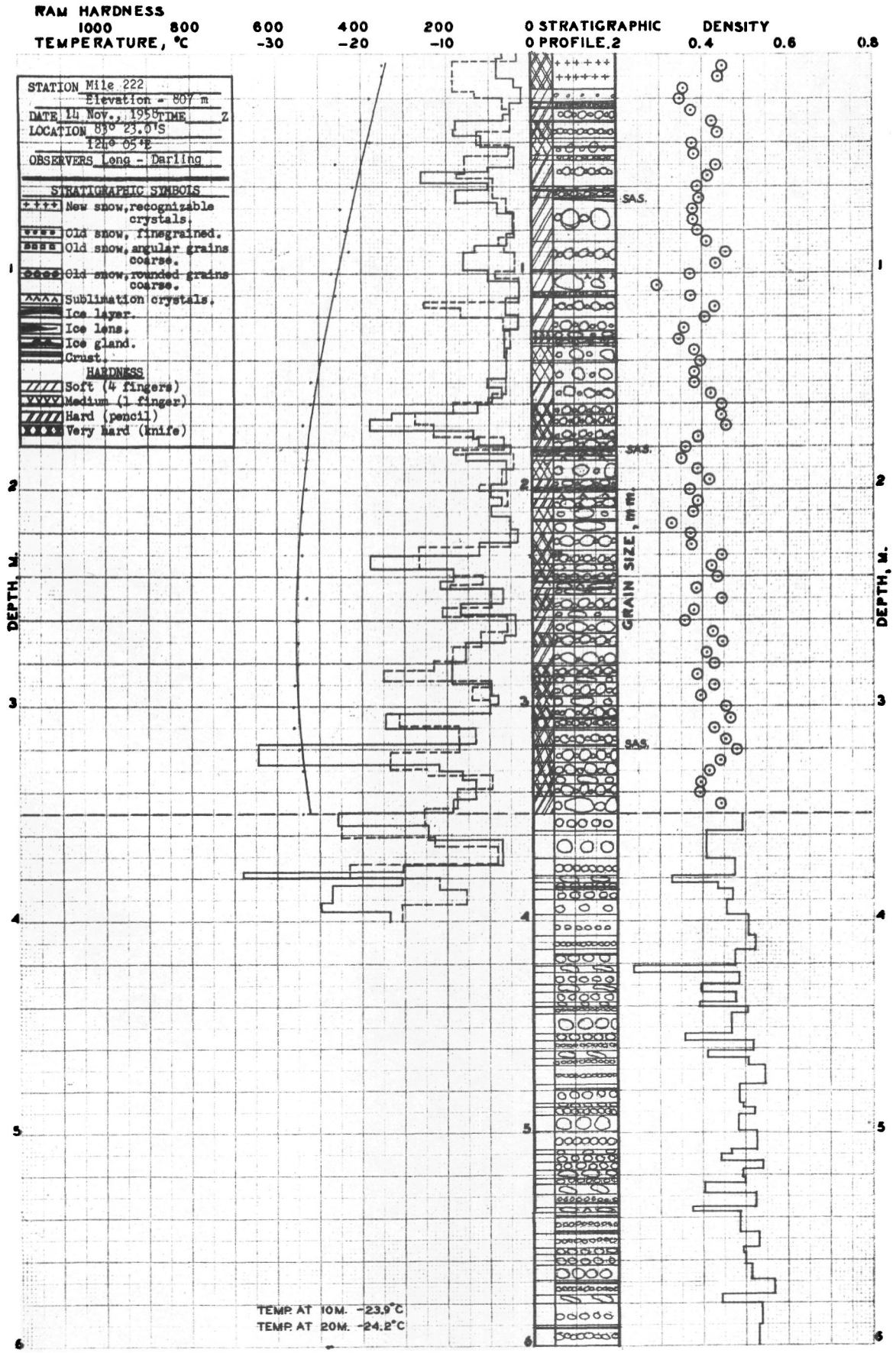
Mile 216
14 November 1958

Depth cm	Hardness Number, Kg
2- 9	15
9- 11	132
11- 18	110
18- 21	252
21- 29	314
29- 33	202
33- 38	92
38- 43	72
43- 48	152
48- 55	59
55- 58	19
58- 63	252
63- 68	384
68- 73	652
73- 77	185
77- 86	85
86- 93	82
93- 97	27
97-101	377
101-105	117
105-118	65
118-132	37
132-138	65
138-148	33

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
148-157	255				
157-166	130				
166-178	50				
178-188	51				
188-194	66				
194-198	141				
198-206	39				
206-211	113				
211-218	326				
218-224	381				
224-231	301				
231-237	186				
237-247	151				
247-253	66				
253-260	146				
260-271	96				
271-276	277				
276-281	367				
281-288	447				
288-295	97				
295-299	682				
299-303	232				
303-312	89				
312-318	632				
318-326	475				
326-330	382				
330-339	257				
339-346	332				
346-354	287				
354-360	407				
360-367	414				
367-382	307				
382-388	232				
388-396	269				
396-400	2000+				


RAM HARDNESS
1000 800 600 400 200 0
TEMPERATURE, °C -30 -20 -10
STRATIGRAPHIC PROFILE
DENSITY
0 0.2 0.4 0.6 0.8
STATION Mile 222
Elevation - 807 m
DATE 14 Nov., 1958 TIME Z
LOCATION 83° 23.0'S
120° 05'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very Hard (knife)
SAS.
SAS.
SAS.
GRAIN SIZE, mm.
DEPTH, M.
DEPTH, M.
TEMP. AT 10M. -23.9°C
TEMP. AT 20M. -24.2°C

IGY Byrd Traverse 1958-59

Station Mile 222

Date 14 November 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 16	VH	.5	
16- 22	S	.5	
22			Thin granular crust
22- 24	M	.5	
24			Thin granular crust
24- 30	H	1.0-2.0	Drip grains
30- 38	H	1.0-1.5	Harder than layer above
38- 46	M	1.0-2.0	
42			Granular crust
46- 48	M	1.0-1.5	Harder than layer above
48- 60	H	1.0-2.0	Angular grains
60- 61	S	2.0-4.0	Cup shaped crystals; sublimation crystals; many drip grains
61			No. 3 granular crust
61- 65		1.0-2.0	Drip grains; angular grains
65			Granular crust diagonally to 66 cm; sastrugi surface
65- 85	H	2.0-5.0	Large drip grains
85- 99	VH	1.0-3.0	Few drip grains
99			Granular crust
99-108	S	2.0-8.0	Loose layer, large drip grains
108-110	VH	1.0-2.0	
110-111	M	1.0-2.0	
111-120	H	1.0-2.0	Few drip grains
120-126	H	1.0-3.0	Softer than layer above
126-129	M	1.0-4.0	
129			Granular crust
129-132	M	1.0-2.0	
132-133	S	2.0-4.0	Loose, sublimation crystals
133-141	M	1.0-4.0	
141-150	M	1.0-3.0	
150-160	H	1.0-3.0	
160-165	VH	1.0-2.0	
165-170	VH	1.0-2.0	Harder than layer above
170-176	VH	1.0-2.5	Same hardness as 160-165 cm
176-181	H	2.0-4.0	
181			Granular crust at 181, sastrugi surface
181-184	VH	1.0-2.0	
184-186	S	3.0-8.0	Loose, sublimation crystals
186-195	M	1.5-3.0	Many drip grains
195-199	H	1.0-3.0	
199-201	VH	1.0-2.0	

Depth cm	Hardness	Grain Size, mm	Remarks
201-204	M	2.0-4.0	Loose, sublimation crystals, long drip grains
204-208	VH	1.0-4.0	Drip grains
208-214	M	1.0-4.0	
214			Granular crust
214-220	M	2.0-8.0	
220-228	VH	1.0-4.0	
228-234	VH	1.0-2.0	Harder than layer above
234-237	M	2.0-5.0	Angular grains
237-242	VH	1.0-2.0	
242			Granular crust
242-245	S	3.0-8.0	Loose layer, long drip grains
245-248	H	1.0-5.0	Long drip grains
248-255	VH	1.0-3.0	
255-259	M	1.0-4.0	
259-266	H	2.0-6.0	Many drip grains
266-272	VH	1.0-3.0	
272-281	H	1.0-4.0	
281-286	VH	1.0-2.0	
286-289	M	2.0-5.0	Many drip grains
289-295	VH	1.0-3.0	
295-300	M	2.0-6.0	Many drip grains
300-305	VH	1.0-3.0	
305			Very thin crust
305-310	VH	1.0-2.0	
310-311	M	2.0-4.0	Drip grains, rounded grains
311-318	VH	1.0-2.0	Hardness variable VH to H
318			Sastrugi surface
318-326	VH	1.0-3.0	
326-332	VH	2.0-4.0	Softer than layer above, drip grains, round grains
332-336	M	2.0-5.0	Rounded grains
336-342	VH	1.0-3.0	
342-350	H	2.0-8.0	Many drip grains

IGY Byrd Traverse 1958-59

Station Mile 222

Date 14 November 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
350-358	.544	D	M	
358-371	.487	M	M	No. 3 crust at 2 cm
371-379	.494	M	M	
379-382	.522	D	M	
382-385	.483	M	L	
385-390	.524	D	M	
390-397	.469	L	M	
397-407	.442	M	M	
407-414	.541	M	M	
414-421	.496	M	L	
421-424	.497	D	M	
424-429	.404	L	L	Break at 1.0 cm
429-433	.526	D	M	No. 3 crust at 2.5 cm
433-438	.376	L	L	Very loose layer
438-440	.487	D	S	No. 1 crust at 1.0 cm; No. 1 crust at 9.0 cm
440-443	.532	D	S	
443-453	.497	M	M	
453-456	.500	M	M	
456-461	.512	M	L	
461-464	.567	D	S	No. 2 crust at 10 cm
464-468	.446	L	L	Very loose; break at 1.5 cm
468-477	.544	D	S	
477-486	.487	M	M	No. 3 crust at 2.0 cm
486-488	.494	M	M	
488-491	.522	D	M	
491-499	.483	M	L	
499-508	.524	D	M	
508-510	.469	L	M	
510-513	.442	M	M	
513-517	.541	M	M	
517-521	.496	M	L	
521-524	.497	D	M	
524-528	.404	L	L	Break at 1.0 cm
528-535	.526	D	S	No. 3 crust at 2.5 cm
535-537	.376	L	L	Very loose
537-547	.487	D	S	No. 1 crust at 1.0 cm; No. 1 crust at 9.0
547-554	.532	D	S	
554-557	.497	M	M	
557-562	.500	M	M	
562-569	.512	M	L	
569-576	.567	D	S	No. 2 crust at 1.0 cm
576-580	.446	L	L	Very loose layer; break at 1.5 cm
580-590	.537	M	M	

Depth cm	Density	Packing	Grain Size	Remarks
590-600	.533	D	M	No. 3 crust at 1.0 cm
600-606	.544	D	S	No. 3 crust at 4.0 cm
606-616	.594	D	S	
616-622	.593	D	S	
622-633	.532	M	L	No. 3 crust at 10.0 cm
633-636	.494	L	M	
636-638	.544	D	S	
638-645	.534	M	L	
645-652	.556	D	M	
652-660	.532	M	M	
660-671	.565	D	M	No. 2 crust at 10.5 cm
671-675	.500			0-2, D packing and S grain size; 2-4, L packing and L grain size; break at 2.0
675-681	.559	D	M	
681-688	.535	D	M	
688-695	.527	M	L	
695-699	.514	M	L	
699-705	.563	D	M	
705-715	.515	M	M	
715-717	.550	D	S	
717-723	.541	M	M	No. 1 crust at 5.0 cm
723-728	.533	M	L	
728-735	.548	M	M	
735-737	.551	M	S	
737-740	.576	M	M	
740-745	.533	M	L	
745-754	.566	M	M	
754-759	.586	D	S	
759-763	.529	L	M	
763-772	.582	M	S	
772-779	.582	D	M	
779-782	.534	M	L	
782-792	.587	D	S	No. 2 crust at 0.5 cm
792-799	.536	M	L	
799-807	.545			0-6 cm, D packing and M grain size; 6-8.3, L packing and M grain size; break at 6.0 cm
807-815	.571	M	M	
815-823	.590	D	M	
823-827	.555	M	L	
827-830	.574	D	M	
830-837	.532	M	L	
837-841	.582	M	M	
841-843	.594	D	S	
843-852	.588	D	M	
852-858	.546			0-2, L packing and L grains; 2-5.8, M packing and M grains; No. 2 crust at 0.5 cm; break at 2.0 cm

Depth cm	Density	Packing	Grain Size	Remarks
858- 868	.583	M	L	
868- 874	.556	M	L	No. 2 crust at 0.5 cm
874- 879	.604	D	S	
879- 883	.598	D	M	
883- 889	.589	D	L	
889- 899	.586	D	M	
899- 903	.634	D	M	
903- 912	.578	M	M	
912- 919	.589	D	S	
919- 929	.601	D	M	No. 2 crust at 2.5 cm
929- 939	.609	M	M	
939- 948	.542	M	L	
948- 952	.568	M	L	
952- 957	.552	M	L	Very large grains
957- 962	.579	M	M	
962- 970	.608	D	M	No. 2 crust at 6.0 cm
970- 980	.567	M	L	
980- 984	.597	M	L	
984- 988	.628	M	M	
988- 991	.452	M	L	
991- 994	.633	D	S	
994- 998				
998-1006	.630	D	S	
1006-1011	.596	M	M	
1011-1017	.618	D	S	
1016-1023	.597	M	M	
1023-1033	.596			0-2.5 cm M packing and L grains; 2.5-4.0 cm M packing and M grains; 4-919 cm M packing and L grains
1033-1041	.602	M	M	
1041-1048	.591	M	L	
1048-1055	.602	M	M	
1055-1061	.594			0-2.5 M packing and M grains; 2.5-4 M packing and L grains; 4.0-6.2 M packing and M grains
1061-1069	.624	D	S	No. 1 crust at 1.5 cm
1069-1073	.588	M	L	
1073-1077	.628	M	M	No. 3 crust at 2 to 3 cm (sastrugi surface)
1077-1085	.622	D	L	No. 1 crust at 6.5 cm
1085-1095	.612	D	M	
1095-1101	.633	D	M	No. 2 crust at 3.5 cm
1101-1109	.629	D	M	
1109-1114	.618	M	L	
1114-1117	.631	D	M	No. 2 crust at 1.5 cm
1117-1122	.608	D	L	
1122-1130	.596	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
1130-1136	.569	M	L	
1136-1145	.607	D	M	
1145-1149	.644	M	M	
1149-1156	.640	D	M	
1156-1166	.614	D	L	
1166-1176	.624			.5-2.5 cm M packing and L grains; 2.5-9.7 cm D packing and M grains; No. 3 crust 7.0
1176-1185	.597	M	L	
1185-1195	.597			0-1.5 cm M packing and L grains; 1.5-10.0 cm M packing and M grains
1195-1205	.616	M	L	
1205-1215	.619	D	M	
1215-1225	.635	D	S	No. 1 crust at 1.5 cm
1225-1232	.638	M	M	
1232-1240	.637	D	M	
1240-1249	.639			0-4 cm D packing and L grains; 4-6 cm D packing and S grains; 6-10 cm D packing and L grains; No. 3 crust at 4.0 cm
1249-1259	.622	D	L	No. 2 crust at 4.0 cm
1259-1265	.619	D	M	
1265-1274	.643	D	M	No. 1 crust at 4.0 cm
1274-1279	.615	M	L	
1279-1289	.619			0-2.5 D packing and L grains; 2.5-10.0 D packing and M grains
1289-1299	.625			0-7.0 D packing and L grains; 7.0-10.0 D packing and M grains; crust at 7.0
1299-1309	.653	D	S	
1309-1318	.652	D	M	
1318-1321	.657	D	S	No. 1 crust at 3.0 cm
1321-1331	.648			0-2.5 cm M packing and L grains; 2.5-5.0 cm D packing and M grains; 5.0-9.8 M packing and L grains
1331-1341	.637	D	M	No. 3 crust at 5.0 cm
1341-1344	.623	M	L	No. 1 crust at 2.5 cm
1344-1351	.654	D	M	
1351-1361	.685	D	L	No. 2 crust at 4.5 cm
1361-1371	.637	M	L	No. 1 crust at 3.0 cm
1371-1374	.655	M	M	
1374-1376	.586	M	L	
1376-1388	.644	D	L	
1388-1398	.648	D	L	
1398-1407	.657	D	M	
1407-1411	.648	M	L	
1411-1421	.648	M	L	
1421-1433	.657	D	M	
1433-1436	.670	M	M	

Depth cm	Density	Packing	Grain Size	Remarks
1436-1445	.655	D	L	No. 2 crust at 6.0 cm
1445-1455	.657	D	M	No. 3 crust at 3.0 cm
1455-1465	.669	D	S	
1465-1473	.660	M	L	
1473-1483	.642	D	L	No. 1 crust at 0.5 cm
1483-1493	.651	D	L	No. 3 crust at 8.0 cm
1493-1502	.680	D	M	
1502-1507	.668	M	L	
1507-1512	.654	M	L	
1512-1522	.657	D	M	
1522-1532	.651	M	M	
1532-1542	.660	M	M	
1542-1546	.644	M	L	
1546-1550	.648	M	L	
1550-1554	.683	M	M	
1554-1560	.673	M	L	
1560-1572	.680	D	M	
1572-1582	.673	M	L	
1582-1591	.669	D	M	No. 1 crust at 9.5 cm (extra icy)
1591-1596	.650	M	L	
1596-1606	.658	D	M	
1606-1612	.652	M	L	
1612-1618	.667	M	M	
1618-1627	.662	M	L	
1627-1632	.683	M	M	
1632-1637	.661	M	L	
1637-1647	.673	D	L	
1647-1649	.658	D	S	
1649-1662	.676	D	M	
1662-1667	.686	D	M	
1667-1677	.680	D	M	No. 1 crust at 4.0 cm
1677-1679	.669	M	L	
1679-1689	.685	D	M	
1689-1694	.683	D	M	
1694-1701	.684	D	M	
1701-1711	.694	D	M	
1711-1720	.692	D	M	
1720-1730	.685	D	M	No. 3 crust at 0.5 to 4.5 cm
1730-1734	.706	D	L	
1734-1744	.692	D	L	
1744-1754	.683	D	M	
1754-1761	.687	D	M	
1761-1771	.696	D	L	No. 3 crust at 2.0 cm
1771-1781	.699	D	M	No. 2 crust at 3.0 cm
1781-1791	.705	D	M	No. 2 crust at 3.0 cm

Depth cm	Density	Packing	Grain Size	Remarks
1791-1801	.692	D	L	
1801-1805	.698	D	M	No. 2 crust at 1.5 cm
1805-1815	.683	D	L	
1815-1825	.696	D	M	
1825-1835	.692	D	L	
1835-1848	.702	D	M	No. 3 crust at 5.0 cm
1848-1858	.705	D	M	
1858-1868	.705	D	M	
1868-1888	.707	D	M	No. 2 crust at 7.0 cm
1888-1898	.694	D	L	
1898-1908	.694	D	L	
1908-1918	.700	D	M	
1918-1925	.703	D	L	
1925-1935	.696	D	M	No. 2 crust at 9.5 cm
1935-1945	.696	D	L	No. 2 crust at 1.5 cm
1945-1955	.715	D	M	
1955-1962	.708	D	L	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 228	
16 November 1958	
0- 12	10
12- 15	35
15- 20	152
20- 25	110
25- 36	232
36- 40	102
40- 50	229
50- 53	124
53- 60	30
60- 68	39
68- 76	20
76- 81	47
81- 88	130
88- 94	170
94-101	45
101-105	52
105-113	208
113-120	133
120-122	95
122-126	50
126-131	78
131-138	16
138-142	73
142-157	130
157-162	79
162-172	85
172-177	44
177-188	114
188-198	204
198-206	63
206-209	96
209-225	84
225-230	186
230-234	96
234-242	74
242-245	66
245-255	231
255-262	326
262-268	381
268-273	457
273-279	457
279-284	242
284-293	307
293-298	187
298-303	457
303-307	307
307-311	119
311-321	382
321-330	425
330-344	542
344-350	257
350-357	434
357-367	382
367-375	504
375-382	242
382-394	632
394-400	967
Mile 234	
16 November 1958	
1- 3	22
3- 8	62
8- 11	302
11- 15	314
15- 20	152
20- 23	117
23- 28	62
28- 32	89
32- 37	92
37- 40	202
40- 45	112
45- 48	202
48- 52	114
52- 57	72
57- 60	102
60- 64	566
64- 70	454
70- 76	230
76- 79	215
79- 89	60
89- 98	55
98-106	83
106-111	114
111-115	164
115-136	73
136-142	80
142-149	131
149-155	110
155-159	50
159-171	50
171-180	176
180-185	186
185-193	211
193-207	51
207-219	93
219-223	254
223-228	114
228-232	51
232-243	148
243-251	287
251-256	366
256-260	164
260-274	326
274-281	306
281-288	92
288-295	198
295-305	381
305-313	212
313-318	156
318-326	474
326-340	1500+
340-344	418
344-346	381
346-351	606
351-357	306
357-361	493
361-369	381
369-374	396
374-383	289
383-391	156
391-397	631
397-400	606
Mile 240	
16 November 1958	
2- 10	29
10- 20	19
20- 22	202
22- 27	214
27- 33	329
33- 39	127
39- 43	89
43- 48	82
48- 56	52
56- 61	102
61- 66	122
66- 74	52
74- 82	40
82- 84	253

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
84- 91	325
91- 96	485
96-103	83
103-111	39
111-116	95
116-123	133
123-131	162
131-141	67
141-146	167
146-153	45
153-160	121
160-165	60
165-173	95
173-178	456
178-187	424
187-190	306
190-197	113
197-202	36
202-209	156
209-218	88
218-226	118
226-233	220
233-240	326
240-248	286
248-253	396
253-264	494
264-271	284
271-281	156
281-297	147
297-303	307
303-308	457
308-315	542
315-321	557
321-327	407
327-333	632
333-339	257
339-351	632
351-357	532
357-361	382
361-367	487
367-384	1500+
384-387	557
387-393	382
393-399	257
399-400	907

Mile 246
16 November 1958

Depth cm	Hardness Number, Kg
2- 7	20
7- 8	102
8- 11	202
11- 19	314
19- 26	44
26- 31	32
31- 37	212
37- 41	180
41- 46	42
46- 56	21
56- 71	90
71- 75	189
75- 80	43
80- 87	18
87- 91	78
91- 99	7
99-105	70
105-113	78
113-122	70
122-124	378
124-133	393
133-142	105
142-150	62
150-155	114
155-159	118
159-164	185
164-172	73
172-177	78
177-183	51
183-187	166
187-198	105
198-205	161
205-212	264
212-217	276
217-221	144
221-228	63
228-234	216
234-241	162
241-246	131
246-250	164
250-255	61
255-262	224
262-269	96
269-274	61
274-281	237
281-288	174
288-292	367
292-294	187
294-300	127
300-304	279
304-310	449
310-316	112
316-319	337
319-324	152
324-328	97
328-333	116
333-338	187
338-340	144
340-350	457
350-356	257
356-360	194
360-367	199
367-371	345
371-377	507
377-394	544
394-397	557
397-400	657

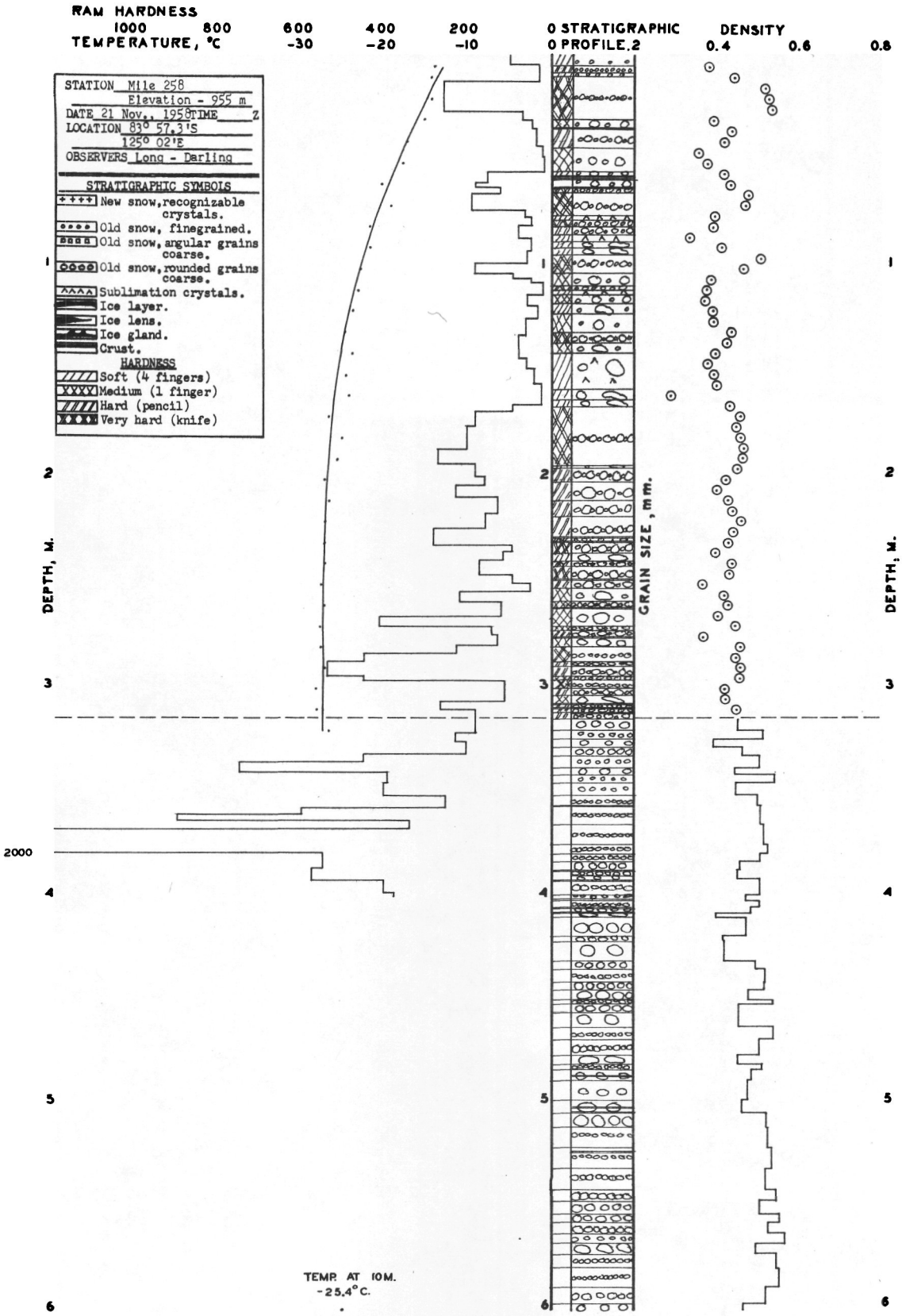
Mile 252
16 November 1958

Depth cm	Hardness Number, Kg
3- 11	7
11- 13	21
13- 17	89
17- 24	215
24- 29	162
29- 39	102
39- 44	52
44- 47	52
47- 50	214
50- 62	32
62- 72	42
72- 74	153
74- 78	65
78- 95	41
95- 99	33
99-103	53
103-107	153
107-116	53

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
116-123	41				
123-130	12				
130-138	35				
138-147	113				
147-153	93				
153-158	73				
158-163	113				
163-169	35				
169-175	38				
175-189	82				
189-195	97				
195-197	304				
197-201	141				
201-207	51				
207-213	111				
213-219	51				
219-228	136				
228-232	209				
232-236	143				
236-242	81				
242-245	96				
245-254	116				
254-258	186				
258-264	111				
264-267	216				
267-276	96				
276-281	205				
281-285	277				
285-293	120				
293-297	232				
297-306	187				
306-311	187				
311-316	349				
316-325	257				
325-328	187				
328-335	125				
335-340	224				
340-343	277				
343-352	341				
352-359	264				
359-366	592				
366-374	287				
374-382	475				
382-389	415				
389-400	617				


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC
0 PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 258
Elevation - 955 m
DATE 21 Nov., 1958 TIME Z
LOCATION 83° 57.3'S
125° 02'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
2000
TEMP. AT 10M.
-25.4°C.

IGY Byrd Traverse 1958-59

Station Mile 258

Date 21 November 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 5	VS	.5-1.0	Old snow
5- 8	VH	.5-1.0	
8- 10	S	.5-1.0	
10- 30	VH	.5-1.0	Irregular top and bottom (sastrugi)
30- 34	M	1.0-2.0	Few drip grains
34			Granular crust
34- 43	H	1.0-1.5	
43- 54	M	1.0-2.0	
54- 56	S	1.0-2.5	Many drip grains
56 & 57			Granular crust
57- 61	H	1.0-2.0	
61			Granular crust
61- 64	VH	1.0-2.0	
64- 75	VH	1.0-2.0	
75- 77	S	2.0-7.0	Very soft layer, loose grains, sublimation crystals
77- 80	VH	1.0-2.0	
80- 84	H	1.0-3.0	
84- 87	S	2.0-5.0	Very soft layer, loose grains, long drip grains, sublimation crystals
87- 90	S	2.0-6.0	Long drips; harder than layer above
90- 93	S	2.0-5.0	
93-102	VH	1.0-2.0	Extra compact, irregular top and bottom, lensatic layer
102-108	M	1.0-3.0	Few drip grains
108-110	H	1.0-2.0	Lensatic layer
110-112	S	2.0-7.0	Loose grains, sublimation crystals
112-116	M	1.0-3.0	
116-121	S	1.0-4.0	Many drip grains
121-130	M	1.0-3.0	
130-135	VH	1.0-2.0	Lensatic layer
135-157	M	1.0-4.0	Drip grains
157-162	S	2.0-5.0	Very soft layer, loose grains, obscure sublimation crystals
162-165	S	2.0-5.0	Many drip grains
165-193	H	1.0-2.0	Few drip grains
193-194	S	1.0-4.0	Loose, few drip grains
194-201	M	1.0-2.0	
201-210	M	1.0-4.0	Softer than layer above
210-218	H	1.0-2.0	
218-228	VH	1.0-2.0	
228			Granular crust

Depth cm	Hard-ness	Size,mm	Remarks
228-229	VH	1.0-2.0	Few drip grains
229-230	S	1.0-3.0	Loose, drip grains
230-235	VH	1.0-3.0	
235-239	S	2.0-5.0	
239-241	VH	1.0-2.0	
241-248	VH	1.0-3.0	
248			Granular crust
248-252	H	1.0-3.0	
252-258	M	1.0-4.0	
258-261	VH	.5-1.5	
261			Granular crust
261-270	M	2.0-3.0	
270-272	VH	.5-1.0	
272-275	H	1.0-3.0	
275			Granular crust
275-280	M	2.0-3.0	
280-287	VH	1.0	
287-289	H	1.0-1.5	
289-294	H	1.0-2.0	Drip grains
294-296	VH	1.0-1.5	
296-300	VH	1.0-1.5	Extra hard layer
300-303	H	1.0-1.5	
303-307	S	2.0-5.0	Loose
307-309	H	1.0-3.0	
309			Granular crust
309-311	H	1.0-3.0	Softer than layer above
311			Granular crust
311-320	VH	1.0-2.0	

IGY Byrd Traverse 1958-59

Station Mile 258

Date 21 November 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
315-320	.452	M	M	
320-324	.511	M	S	
324-328	.392	L	M	
328-332	.462	M	M	Break at 4.0
332-338	.503	M	S	
338-341	.444	L	M	
341-345	.541	M	S	
345-351	.448	M	S	
351-356	.500	D	S	No. 2 crust at 5.5; break at 1.5 cm
356-365	.508	D	S	
365-375	.515	D	S	
375-379	.526	D	S	
379-383	.507	D	S	
383-387	.458	M	M	
387-391	.452			0-2.0 cm D packing and M grains; 2.0-4.0 L packing and M grains; No. 3 crust at 0.5 cm; break at 2.5 cm
391-399	.506	D	M	No. 1 crust at 0.5 cm
399-402	.472	M	S	No. 3 crust at 2.0 cm
402-405	.502	D	S	
405-408	.484	M	M	No. 2 crust at 0.5 cm and 2.5 cm
408-410	.400	L	L	
410-419	.471	M	L	
419-421	.418	M	M	
421-431	.420	L	L	
431-435	.494	M	M	
435-441	.519	D	S	
441-445	.518	M	M	
445-450	.480	M	L	
450-452	.538	D	S	
452-463	.454			0-4.0 cm M packing and M grains; 4.0-11.0 L packing and L grains; break at 7.5 cm
463-469	.539	D	S	
469-477	.506	D	M	
477-481	.452	L	L	
481-484	.511	D	S	
484-489	.486	L	M	No. 2 crust at 3.5 cm
489-499	.478	L	M	Loose and large 0-0.5 cm, break at 2.5 cm
499-505	.463	L	L	No. 2 crusts at 3.5 cm and 5.5 cm
505-512	.522	M	L	
512-522	.524	D	S	
522-532	.536	D	S	No. 3 crust at 1.5 cm
532-542	.520	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
542-547	.546	D	M	1.5-2.0 cm loose and medium
547-554	.502	M	M	
554-558	.552	M	M	
558-563	.526	D	M	
563-568	.565	M	S	
568-573	.495	M	L	
573-580	.546	D	S	
580-589	.551	D	S	
589-597	.520	M	M	
597-600	.467	L	M	
600-601	.527	D	S	
601-605	.520	M	M	
605-607	.560	D	S	
607-613	.520	M	M	
613-615	.560	D	S	
615-621	.536	D	S	
621-626	.520	D	M	
626-636	.547	D	M	
636-644	.559	D	M	
644-649	.573	D	S	
649-658	.522	M	M	
658-660	.555	D	S	
660-667	.494	L	M	
667-673	.550	D	S	
673-679	.535	M	M	No. 2 crust at 6.0 cm
679-687	.577	D	S	No. 2 crust at 6.0 cm
687-697	.565	D	S	
697-703	.567	D	M	
703-710	.523	D	M	
710-713	.523	M	M	
713-723	.564	D	S	No. 1 crust at 0.5 cm
723-733	.564	D	S	No. 3 crust at 3.0 cm
733-743	.558	D	M	Break at 3.0 cm
743-753	.574	D	S	
753-757	.587	D	S	
757-766	.545	M	M	
766-776	.562	D	S	No. 3 crust at 3.0 cm
776-788	.588	D	S	No. 2 crust at 3.0 cm
788-795	.580	D	M	No. 2 crust at 1.5 cm
795-799	.551	M	L	
799-802	.512	L	L	
802-812	.570	D	M	
812-818	.596	D	S	No. 2 crust at 5.0 cm
818-828	.570	D	M	
828-831	.592	D	M	No. 1 crust at 2.0 cm

Depth cm	Density	Packing	Grain Size	Remarks
831- 841	.596	D	S	
841- 850	.594	D	S	
850- 860	.594	D	M	
860- 863	.582	M	S	
863- 865	.520	M	L	
865- 868	.527	M	L	
868- 873	.583	D	M	No. 3 crust at 1.5 and 3.5 cm
873- 879	.550	D	M	
879- 889	.578	D	M	No. 3 crust at 2.0 cm
889- 896	.567	M	M	
896- 900	.582	D	S	No. 3 crust at 2.0 cm
900- 908	.591	D	S	
908- 914	.593	M	M	No. 1 crust at 5.0 cm
914- 919	.590	M	M	
919- 928	.590	D	S	
928- 938	.597	D	S	
938- 944	.587	D	M	
944- 951	.577	M	M	No. 2 crust at 3.0 cm
951- 956	.603	D	S	
956- 966	.604	D	S	
966- 976	.594	D	M	
976- 983	.602	D	M	No. 1 crust at 3.0 cm
983- 988	.598	D	M	
988- 997	.590	M	M	
997-1004	.540	M	L	
1004-1011	.597	D	M	
1011-1018	.618	D	S	
1018-1022	.605	D	M	
1022-1026	.546	L	L	
1026-1029	.605	D	M	
1029-1034	.616	D	S	
1034-1044	.578	M	L	
1044-1054	.615	D	M	
1054-1059	.620	D	M	No. 2 crust at 3.5 cm
1059-1067	.599	M	M	
1067-1070	.603	M	L	No. 1 crust at 1.0 cm
1070-1076	.596	M	M	
1076-1085	.611	M	M	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 264	
22 November 1958	
0- 7	109
7- 11	92
11- 16	62
16- 21	74
21- 27	42
27- 31	92
31- 33	77
33- 36	32
36- 40	24
40- 42	152
42- 45	834
45- 48	69
48- 55	68
55- 61	84
61- 66	42
66- 74	45
74- 80	248
80- 86	367
86- 90	142
90- 98	71
98-103	78
103-110	211
110-119	55
119-127	17
127-133	290
133-140	120
140-148	95
148-154	50
154-158	118
158-168	131
168-178	24
178-183	115
183-192	126
192-200	176
200-207	326
207-213	381
213-219	381
219-222	356
222-228	231
228-236	193
236-241	306
241-244	606
244-249	186
249-255	156
255-260	246
260-266	281
266-272	206
272-277	62
277-283	157
283-293	247
293-300	274
300-304	157
304-308	119
308-316	947
316-319	557
319-325	307
325-331	419
331-333	307
333-335	307
335-339	194
339-347	287
347-352	367
352-360	175
360-366	307
366-376	247
376-381	277
381-393	319
393-394	757
394-396	2000+
396-397	4000+
397-400	1000+
Mile 270	
22 November 1958	
2- 14	10
14- 22	33
22- 26	77
26- 30	47
30- 33	72
33- 40	32
40- 46	107
46- 52	32
52- 56	39
56- 62	47
62- 67	44
67- 71	190
71- 75	315
75- 81	213
81- 85	163
85- 92	31
92-102	32
102-109	45
109-119	176
119-129	115
129-135	37
135-142	57
142-151	85
151-154	49
154-164	105
164-168	74
168-176	25
176-181	61
181-195	326
195-201	381
201-207	56
207-213	231
213-224	431
224-230	181
230-241	196
241-245	231
245-254	138
254-256	306
256-262	106
262-271	456
271-277	631
277-286	223
286-291	241
291-298	84
298-302	166
302-317	252
317-326	137
326-332	262
332-338	202
338-341	187
341-345	119
345-351	382
351-354	277
354-358	232
358-364	202
364-370	382
370-387	1000+
387-394	264
394-400	217
Mile 276	
22 November 1958	
1- 4	16
4- 8	27
8- 11	72

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
11- 15	48
15- 20	20
20- 22	152
22- 24	167
24- 26	77
26- 34	59
34- 38	129
38- 44	52
44- 48	92
48- 53	77
53- 57	69
57- 64	329
64- 68	140
68- 72	52
72- 78	78
78- 80	178
80- 88	535
88- 92	208
92- 97	167
97-107	95
107-111	95
111-116	221
116-118	409
118-122	591
122-124	230
124-132	142
132-138	545
138-143	131
143-155	80
155-159	165
159-168	85
168-172	95
172-185	43
185-187	95
187-195	63
195-207	96
207-217	231
217-223	276
223-230	96
230-238	63
238-245	121
245-255	231
255-261	381
261-267	506
267-278	686
278-286	946
286-292	257
292-296	307
296-298	757
298-307	457
307-314	177
314-319	519
319-326	592
326-329	407
329-338	173
338-343	457
343-350	327
350-355	217
355-360	127
360-366	507
366-375	835
375-384	835
384-388	569
388-392	569
392-400	694

Mile 282
Station #1
22 November 1958

Depth cm	Hardness Number, Kg
0- 6	44
6- 10	47
10- 16	12
16- 18	27
18- 22	182
22- 29	40
29- 35	32
35- 39	62
39- 41	42
41- 43	38
43- 46	82
46- 56	92
56- 62	67
62- 68	104
68- 73	92
73- 82	57
82- 87	63
87- 89	253
89- 93	165
93-103	63
103-107	78
107-111	65
111-117	213
117-122	110
122-127	257
127-137	230
137-143	275
143-146	215
146-149	305
149-156	123
156-159	262
159-163	410
163-167	117
167-173	35
173-177	95
177-183	381
183-189	631
189-191	456
191-198	176
198-205	326
205-212	306
212-218	1000+
218-222	1000+
222-222	

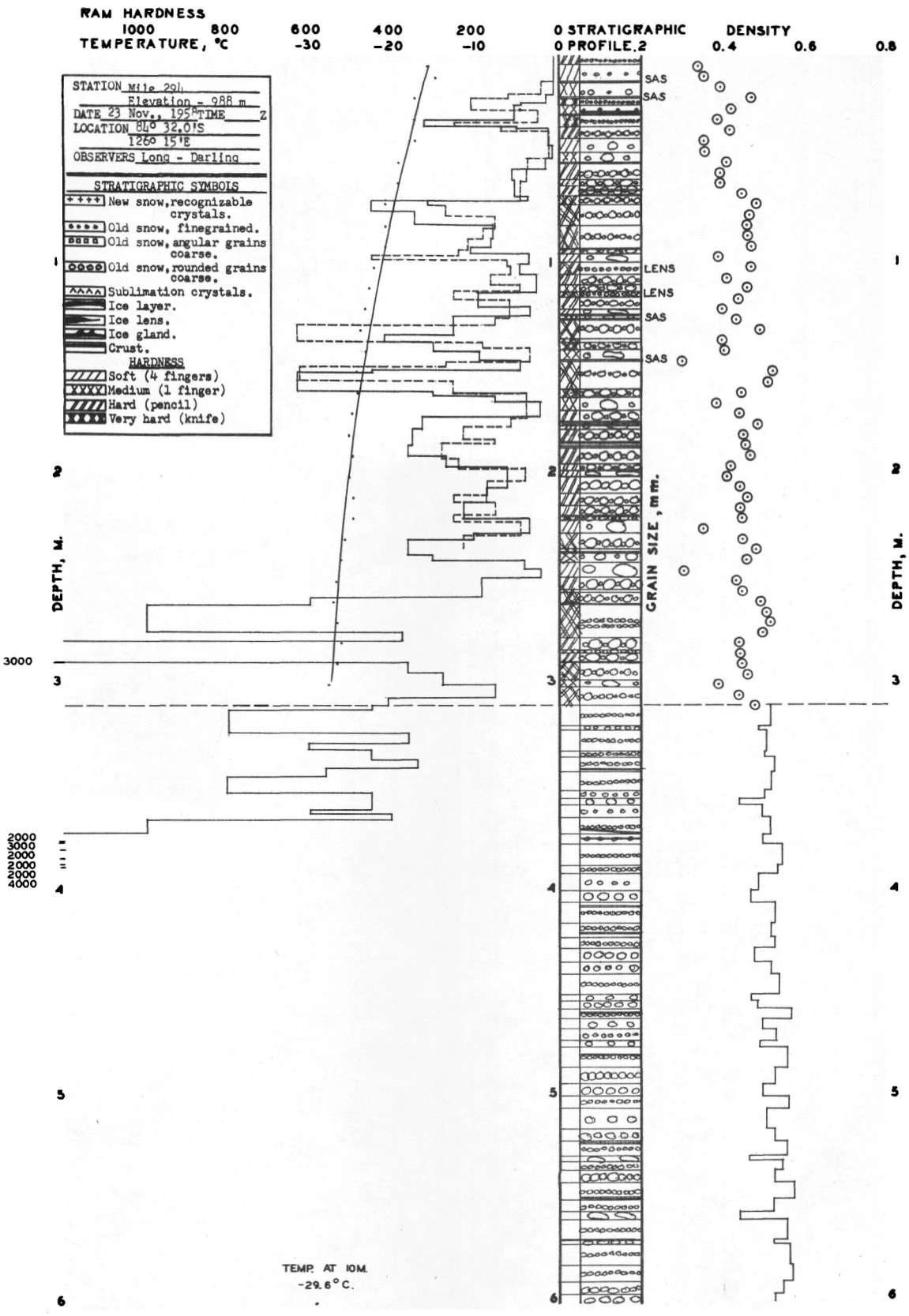
Mile 282
Station #2
22 November 1958

Depth cm	Hardness Number, Kg
2- 15	14
15- 20	64
20- 25	44
25- 34	109
34- 41	81
41- 55	94
55- 62	81
62- 70	71
70- 80	50
80- 84	275
84- 93	105
93-100	69
100-108	60
108-115	69
115-127	242
127-131	117
131-135	230
135-141	305
141-149	98
149-157	98
157-168	87
168-177	421
177-187	350
187-191	231

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
191-196	216	299-305	632		
196-199	1000+	305-318	567		
		318-322	269		
Mile 288		322-326	194		
22 November 1958		326-336	757		
2- 12	17	336-347	687		
12- 17	42	347-359	1000+		
17- 20	40	359-361	1000+		
20- 24	32	361-363	1000+		
24- 33	22	363-367	485		
33- 38	32	367-372	397		
38- 42	112	372-381	835		
42- 45	102	381-391	1000+		
45- 50	122	391-398	1000+		
50- 52	227	398-400	1000+		
52- 55	184				
55- 64	54				
64- 70	49				
70- 78	83				
78- 85	70				
85- 94	215				
94- 97	185				
97-102	77				
102-110	275				
110-115	95				
115-126	90				
126-133	325				
133-140	540				
140-148	285				
148-154	105				
154-165	60				
165-183	192				
183-200	506				
200-211	156				
211-217	306				
217-223	356				
223-230	198				
230-239	206				
239-249	676				
249-256	591				
256-266	718				
266-268	231				
268-274	106				
274-284	361				
284-290	457				
290-299	119				


RAM HARDNESS
1000 800 600 400 200 0
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 294
Elevation - 988 m
DATE 23 Nov., 195[illegible] TIME [illegible] Z
LOCATION 84° 32.0'S
126° 15'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS
SAS
LENS
LENS
SAS
SAS
DEPTH, M.
GRAIN SIZE, mm.
DEPTH, M.
3000
2000
3000
2000
2000
2000
4000
TEMP. AT 10M.
-29.6° C.

IGY Byrd Traverse 1958-59

Station Mile 294

Date 23 November 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0-4	H	.5 and less	
4-12	S	.5 and less	
12			Granular crust, sastrugi surface
12-20	M	.5-1.0	
20			Granular crust, sastrugi surface
20-23	VH	.5	
23-27	M	.5	
26			Thin, irregular, "scalloped" crust
27-33	VH	<1.0	
27			Thin granular crust
33-39	H	.5-1.5	
39-45	S	1.0-2.5	
45-50	M	1.0-2.0	
50			Granular crust
50-58	H	1.0-2.0	Small drip grains
58-61	S	1.0-3.0	Drip grains
61-65	H	1.0-2.0	Few drip grains
65-70	VH	1.0-1.5	Extra compact layer
70-80	VH	1.0-2.0	Small drip grains
80-91	VH	1.0-1.5	Softer than two layers above
91			Granular crust
91-93	H	1.0-3.0	Drip grains
93-97	S	1.0-4.0	Large drip grains
97-103	VH	1.0	Lensatic layer
103-108	H	1.0-2.0	Drip grains
108-111	M	1.0-2.5	Drip grains
111-114	VH	1.0	Lensatic layer
114-120	H	1.0-1.5	Small drip grains
120-122	S	1.0-4.0	Long drip grains
122			Granular crust
122-124	M	1.0-2.5	Few drips
124			Crust, sastrugi surface
124-134	VH	1.0-2.0	
134-135	M	1.0-2.0	Few drip grains
135-139	VH	1.0-1.5	
139-144	M	1.0-4.0	Drip grains
144			Granular crust (perhaps sastrugi)
144-158	VH	1.0-1.5	Extra compact layer, small drip grains
158-162	VH	1.0-3.0	Drip grains
162-168	M	1.0-1.5	

Depth cm	Hardness	Grain Size, mm	Remarks
168-173	H	1.0-3.0	Granular crust at 173.0
173-177	S	1.0-4.0	Drip grains; granular crust at 174.0
177-183	H	1.0-1.5	
183-184	M	1.0-2.0	
184-185	VH	1.0-2.0	
185-186	M	1.0-3.0	
186-194	H	1.0-1.5	
194-197	H	1.0-2.0	
197-200	S	2.0-6.0	Loose
200-208	H	1.0-3.0	
208-214	H	1.0-1.5	Harder than layer above
214-219	H	1.0-2.0	Granular crust at 214.0
219-221	VH	1.0-2.0	
221-227	S	1.0-5.0	Drip grains
227-235	VH	1.0-2.0	
235-236	M	1.0-3.0	Drip grains
236-241	M	1.0-2.0	
236 or 241			Thin crust "scalloped"
241-248	S	2.0-6.0	Many drips
248-254	H	1.0-3.0	
254-255	M	1.0-2.0	
255-261	VH	1.0-1.5	
261			Granular crust
261-277	VH	1.0	Extra compact layer
261 and 262			Thin "scalloped" crust
277-283	H	1.0-4.0	Drip grains
283-285	VH	1.0-2.0	
285-289	H	1.0-4.0	
289			Very thin granular crust
289-298	VH	1.0-2.0	
298-301	M	1.0-4.0	
301-310	VH	1.0-1.5	

IGY Byrd Traverse 1958-59

Station Mile 294

Date 23 November 1958

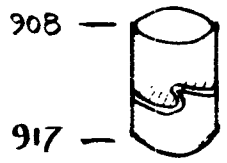
Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
310-320	.514	D	S	
320-322	.486	M	S	
322-332	.503	D	S	
332-335	.500	D	S	
335-342	.523	D	S	No. 2 crust at 6.5 cm
342-351	.517	D	S	
351-355	.500	M	S	
355-358	.438	L	M	
358-364	.493	M	S	
364-372	.513	D	S	No. 1 crust at 6.0-8.0 cm
372-377	.497	M	S	No. 3 crust at 2.0 cm
377-387	.542	D	S	
387-391	.531	D	S	
391-399	.485	M	S	
399-405	.469	M	M	
405-415	.524	D	S	No. 1 crust at 2.0 cm
415-422	.518	D	S	No. 1 crust at 7.0 cm
422-427	.527	D	S	
427-434	.477	M	M	
434-440	.516	M	S	
440-450	.536	D	S	No. 1 crust at 0.3 to 2.5 cm
450-453	.468	L	M	
453-457	.483	M	M	
457-462	.567	D	S	No. 2 crust at 1.0 cm
462-467	.496	L	M	
467-473	.529	M	S	
473-476	.487	L	M	
476-486	.556	D	S	No. 1 crust at 6.0 cm
486-494	.525	D	M	
494-500	.497	M	M	
500-506	.559	D	S	
506-516	.504	L	M	
516-522	.526	M	M	
522-529	.553	D	S	No. 2 crust at 0.5 cm
529-531	.462	L	L	
531-536	.545	D	S	
536-542	.526	D	M	
542-550	.572	D	S	No. 1 crust at 8.0 cm
550-556				0.0-5.5 D packing and S grains; 5.5-6.1 M packing and M grains
556-560	.440	L	L	
560-570	.554	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
570-572	.522	M	M	No. 2 crust at 1.0 cm
572-582	.560	D	S	
582-590	.568	D	S	
590-596	.544	D	M	
596-600	.524	M	M	
600-604	.546	D	M	
604-613	.568	D	M	No. 3 crust at 0.5; No. 2 crust at 5.0 cm
613-618	.474	L	L	
618-624	.547	D	S	No. 2 crust at 0.0 to 3.0
624-627	.513	L	M	
627-630	.565	D	S	
630-638	.532	M	M	No. 1 crust at 0.5 cm
638-642	.571	D	S	
642-647	.549	M	M	
647-652	.578	D	S	No. 2 crust at 0.5 cm
652-662	.560	D	M	
662-666	.565	M	M	No. 3 crust at 2.0 cm
666-673	.557	D	S	
673-683	.568	M	M	No. 3 crust at 4.0 cm
683-687	.573	D	S	
687-692	.541	D	M	
692-702	.568	D	M	
702-707	.586	D	S	No. 3 crust at 4.5 cm; No. 1 crust at 1.0 and 1.5 cm
707-714	.589	D	M	No. 2 crust at 3.0 cm; No. 1 crust at 6.5 cm
714-722	.562	D	M	No. 3 crust at 7.5 cm
722-732	.581	D	M	No. 1 crust at 2.8 to 3.5 cm
732-736	.577	D	M	No. 3 crust at 2.0 cm
736-745	.581	D	S	
745-752	.565	D	M	
752-762	.584	D	S	No. 2 crust at 0.5 cm
762-766	.599	D	S	
766-776	.573	D	M	No. 2 crust at 0.5 cm
776-784	.566	D	M	No. 3 crust at 3.5 cm and 7.0 cm; No. 2 crust at 8.0 cm
784-793	.547	M	M	
793-800	.558	D	M	No. 2 crust at 6.5 cm
800-806	.575	D	M	No. 2 crust at 6.5 cm
806-815	.566	D	M	
815-825	.582	D	M	
825-835	.580	D	S	
835-844	.589	D	S	
844-850	.549	M	M	
850-860	.596	D	S	No. 3 crust at 1.0 cm

Depth cm	Density	Packing	Grain Size	Remarks
860- 866	.574	D	S	No. 3 crust at 6.0 cm
866- 876	.600	D	S	No. 2 crust at 3.5 cm
876- 880	.611	D	S	
880- 884	.591	M	M	
884- 889	.582	M	M	No. 1 crust 4.5 cm
889- 898	.600	D	S	
898- 903	.580	M	M	
903- 908	.586	D	M	
908- 917	.610	D	S	No. 2 crust at 0.5 cm; No. 1 crust at 2.5 to 3.0 cm (note sketch)
917- 922	.580	M	M	
922- 928	.593	D	S	No. 3 crust at 0.5 cm
928- 934	.575	M	M	
934- 943	.610	D	S	No. 1 crust at 0.5 to 2.5 cm
943- 947	.685	D	S	
947- 957	.583	M	M	No. 2 crust at 7.0 cm
957- 967	.604	D	S	
967- 971	.576	D	S	
971- 981	.597	D	M	
981- 986	.570	D	M	
986- 990	.562	M	M	
990- 995	.565	D	M	
995-1000	.604	D	M	
1000-1008	.608	D	S	No. 2 crust at 0.5 cm; No. 1 crust at 6.5 to 7.5 cm
1008-1014	.578	D	M	
1014-1019	.597	D	M	
1019-1031	.622	D	S	Triple No. 1 crust at 0.5; double No. 1 crust at 10.5 cm
1031-1037	.589	M	M	
1037-1044	.626	D	M	Double No. 2 crust at 6.5 cm
1044-1052	.613	M	M	
1052-1057	.598	D	M	
1057-1067	.592	M	L	
1067-1075	.622	D	S	No. 3 crust at 1.0 cm; thin No. 1 crust at 3.0 to 4.0 cm
1075-1082	.579	M	M	
1082-1087	.600	D	M	



RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 300	
24 November 1958	
0- 3	52
3- 10	74
10- 13	202
13- 19	85
19- 22	102
22- 28	52
28- 33	102
33- 38	42
38- 43	92
43- 51	92
51- 62	82
62- 71	57
71- 76	105
76- 79	35
79- 86	380
86- 88	230
88- 94	130
94- 99	155
99-103	192
103-113	170
113-117	192
117-126	105
126-134	80
134-146	155
146-156	110
156-159	405
159-165	380
165-173	172
173-179	105
179-187	193
187-190	256
190-201	73
201-209	231
209-215	131
215-228	133
228-244	126
244-249	246
249-258	73
258-263	396
263-271	136
271-281	367
281-290	422
290-299	422
299-309	307
309-313	532
313-323	382
323-329	407
329-337	569
337-352	1000+
352-367	2000+
367-374	1000
374-384	367
384-388	947
388-396	1000
396-400	494
Mile 306	
24 November 1958	
0- 3	54
3- 10	89
10- 17	64
17- 22	202
22- 28	71
28- 37	194
37- 41	192
41- 46	129
46- 50	72
50- 53	214
53- 57	162
57- 60	244
60- 69	84
69- 78	55
78- 89	170
89- 93	343
93-100	327
100-104	155
104-112	117
112-117	2000+
117-120	2000+
120-124	2000+
124-128	567
128-134	155
134-140	105
140-147	390
147-151	305
151-160	187
160-168	117
168-175	305
175-180	186
180-189	206
189-196	114
196-202	406
202-211	339
211-213	456
213-219	631
219-226	591
226-230	381
230-238	363
238-248	653
248-254	631
254-260	331
260-273	203
273-285	244
285-291	432
291-302	687
302-306	1500+
306-310	1500+
310-313	2000+
313-319	1000+
319-326	1000
326-339	1000
339-350	1000
350-355	457
355-362	542
362-372	757
372-377	1000
377-389	194
389-395	507
395-400	457
Mile 312	
24 November 1958	
0- 10	34
10- 19	169
19- 31	124
31- 34	66
34- 40	35
40- 50	149
50- 53	94
53- 56	34
56- 60	28
60- 66	19
66- 71	94
71- 75	94
75- 77	185
77- 86	65
86- 96	50
96-103	133
103-107	297

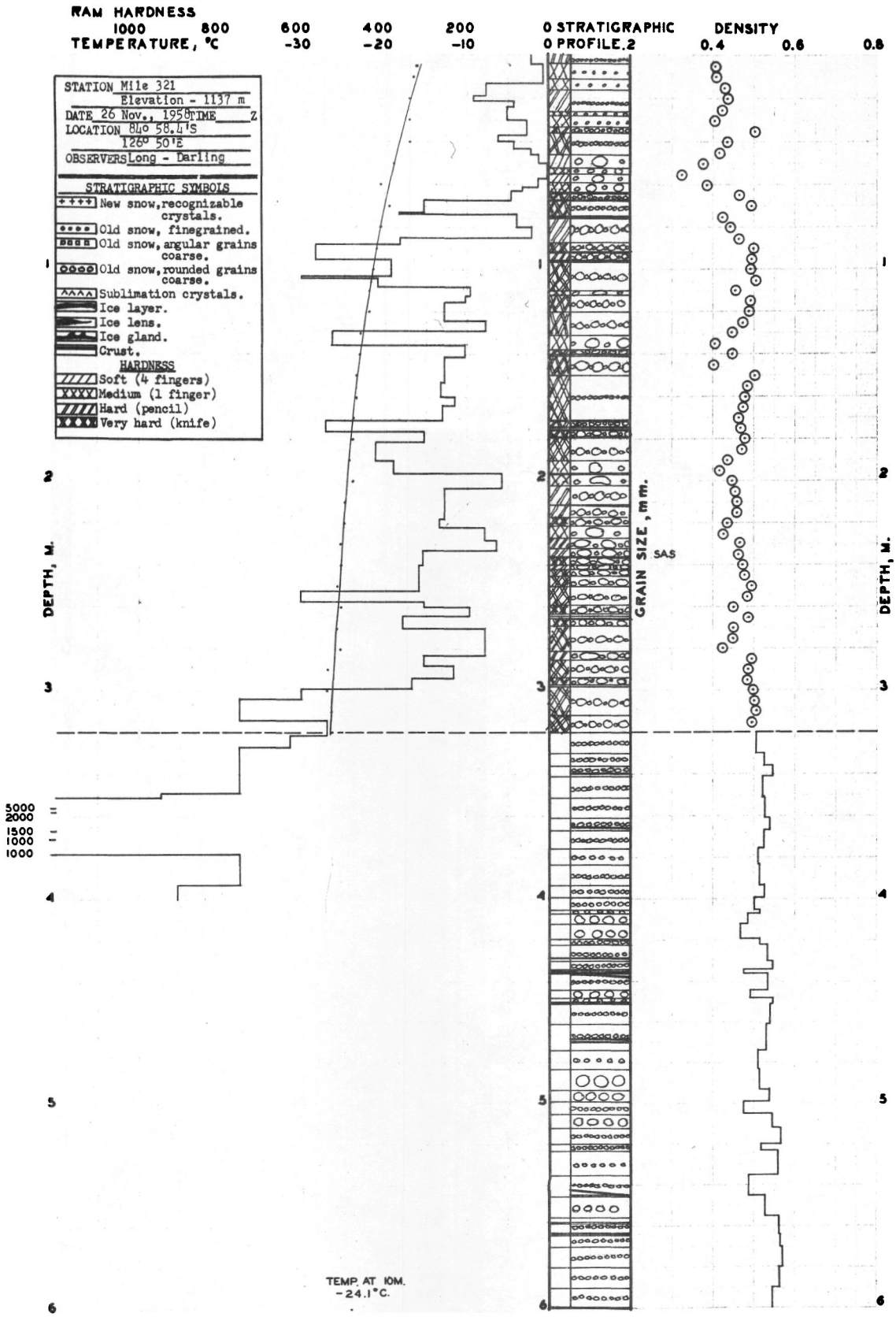
RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
107-111	95
111-119	50
119-128	45
128-131	65
131-137	35
137-145	40
145-150	111
150-156	50
156-162	65
162-166	50
166-172	81
172-175	96
175-181	96
181-186	78
186-192	51
192-201	166
201-208	136
208-215	306
215-220	126
220-231	421
231-235	268
235-240	126
240-244	143
244-247	256
247-255	62
255-262	218
262-264	156
264-273	72
273-282	56
282-293	375
293-299	632
299-307	1000+
307-316	357
316-320	269
320-325	277
325-330	517
330-333	507
333-344	675
344-350	632
350-356	482
356-360	344
360-366	1000
366-371	337
371-377	632
377-382	517
382-388	457
388-393	547
393-400	437

Mile 318
24 November 1958

Depth cm	Hardness Number, Kg
0- 8	30
8- 16	22
16- 27	34
27- 30	54
30- 32	244
32- 37	454
37- 40	154
40- 46	154
46- 54	207
54- 57	154
57- 64	107
64- 67	154
67- 78	175
78- 82	95
82- 90	72
90- 99	95
99-112	185
112-119	70
119-123	230
123-126	355
126-137	167
137-144	240
144-155	142
155-164	70
164-173	119
173-183	186
183-195	193
195-213	498
213-227	591
227-233	181
233-242	156
242-249	113
249-255	631
255-258	1000+
258-264	506
264-275	346
275-279	306
279-287	432
287-292	457
292-303	688
303-310	907
310-317	327
317-321	569
321-332	607
332-334	532
334-339	757
339-342	657
342-346	232
346-350	232
350-356	632
356-359	457
359-364	547
364-370	507
370-374	644
374-378	532
378-385	539
385-388	607
388-392	422
392-397	637
397-400	507


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC 0 PROFILE 2
DENSITY
0.4 0.6 0.8
STATION Mile 321
Elevation - 1137 m
DATE 26 Nov., 1958 TIME Z
LOCATION 84° 58.4'S
126° 50'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
SAS
5000
2000
1500
1000
1000
TEMP. AT 10M.
-24.1°C.

IGY Byrd Traverse 1958-59

Station Mile 321

Date 26 November 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 4	H	.5 and less	
4- 11	M	.5 and less	
11- 16	M	.5	Harder than layer above
16- 26	H	.5	
26- 28	M	.5	
28- 33	M		Harder than layer above
33- 36	VH	.5-1.0	
36- 46	VH	1.0	Softer than layer above
46- 52	S	1.0-3.0	Few drip grains
52- 55	M	1.0-1.5	
55- 59	S	1.0-3.0	
59- 64	M	1.0-1.5	
64			Granular crust
64- 67	VH	.5-1.0	
67			Granular crust
67- 75	VH	1.0-1.5	
75			Double crust
75- 87	H	1.0-2.5	Many drip grains
87- 92	VH	1.0-1.5	Very compact layer
92			Thin crust
92- 95	H	1.0-2.0	
95			Double crust
95-110	VH	1.0-2.5	Angular grains
110-112	M	1.0-3.0	
112-120	VH	1.0-3.0	
120-131	VH	1.0-2.0	Harder than layer above, angular grains
131-138	M	1.0-3.0	Drip grains
138-140	VH	1.0-2.0	Few drip grains
140-141	S	1.0-4.0	Loose, drip grains
141-150	VH	1.0-3.0	
150-171	VH	.5-1.0	
171			Thin crust
171-174	VH	1.0-1.5	Drip grains, softer than 150-171
174 and 175			Granular crust
175-179	VH	1.0-2.5	Drip grains
179			Very thin crust
179-190	VH	1.0-3.0	Drip grains
190-196	M	1.0-2.5	Drip grains
196			Granular crust

Depth cm	Hardness	Grain Size, mm	Remarks
196-202	M	1.0-4.0	Drip grains
202-211	H	1.0-3.0	Drip grains
211			Thin crust
211-217	H	1.0-2.0	Drip grains
217-221	VH	1.0-2.0	
221-227	M	1.0-4.0	Drip grains
227-232	H	1.0-4.0	Drip grains
232-236	H	1.0-4.0	Drip grains, harder than layer above
236			Granular crust, sastrugi surface
236-240	VH	1.0-4.0	Drip grains
240-242	H	1.0-3.0	Drip and angular grains
242-245	VH	1.0-2.5	
245-250	VH	1.0-2.0	Few drip grains, softer than layer above
250-259	VH	1.0-1.5	Extra compact
259-263	H	1.0-2.0	
263-264	M	2.0-6.0	Long drip grains
265			Granular crust
265-269	VH	1.0-3.0	Few drip grains
269-281	VH	1.0-3.0	Few drip grains, softer than layer above
281-285	H	1.0-4.0	
285-294	VH	1.0-2.0	
294-297	VH	1.0-3.0	Softer than layer above
297-298	M	2.0-4.0	Many drip grains
298-312	VH	1.0-2.0	Extra compact layer
312-320	VH	1.0-1.5	

IGY Byrd Traverse 1958-59

Station Mile 321

Date 26 November 1958

Observers Long, Darling

CORE STRATIGRAPHY

(Stratigraphy hard to see due to white out conditions)

Depth cm	Density	Packing	Grain Size	Remarks
320-330	.504	D	S	
330-336	.524	D	S	
336-341	.546	D	S	Double No. 1 crust at 4.0 cm
341-351	.520	D	S	
351-361	.523	D	S	
361-367	.539	D	S	Double No. 1 crust at 4.5 to 5.0 cm
367-375	.523	D	S	
375-383	.511	M	S	
383-393	.512	D	S	
393-399	.526	D	S	
399-405	.503	D	S	
405-407	.515	M	S	
407-412	.484	M	M	
412-419	.468			0-1 cm D packing and L grains; 1-7.1 M packing and M grains
419-422	.512	D	S	
422-430	.531	D	S	No. 1 crust at 7.0 cm
430-434	.544	D	S	
434-436	.475	M	M	No. 1 crust at 0.5 cm
436-444	.533	D	S	No. 2 crust at 0 to 1.0 cm
444-448	.491	M	M	
448-451	.547	M	S	No. 1 crust at 3.0 cm
451-461	.540	D	S	
461-469	.531	D	S	Triple No. 3 crust at 7.0 cm
469-474	.530	M	S	
474-483	.510	M	L	
483-493	.511	M	M	No. 1 crust at 1.0 cm
493-499	.538	D	S	
499-505	.474	M	L	
505-512	.544	D	S	
512-520	.565	D	S	
520-523	.518	M	S	
523-535	.557	D	S	No. 2 crust at 9.0 cm to 12.0 cm; No. 1 crust at 12.0 cm
535-545	.488	L	M	
545-555	.527	M	M	
555-564	.560	D	S	No. 2 crust at 2.0 cm; No. 3 crust at 8.0 cm
564-570	.565	D	S	
570-580	.567	D	S	
580-590	.563	D	S	

Depth cm	Density	Packing	Grain Size	
590-600	.544	D	S	No. 2 crust at 9.8 cm
600-609	.511	L	M	
609-614	.553	D	M	
614-624	.586	D	S	
624-634	.563			0-7.5 cm D packing and S grains; 7.5-10.6 cm D packing and M grains; No. 2 crust at 0.5 cm
634-641	.545	D	M	
641-645	.529	M	M	
645-654	.575	D	S	Double No. 1 crust at 0.5 cm
654-661	.542	D	M	
661-672	.573	D	S	No. 1 crust at 10.5; break at 2.0 cm
672-676	.570	D	S	
676-686	.577	D	S	Melt ice present; No. 3 crust at 3.0 cm
686-696	.573	D	S	
696-704	.578	D	S	Double No. 1 crust at 0.5 cm; melt ice; No. 1 crust at 4.5
704-714	.568	D	S	
714-724	.584	D	S	
724-734	.559	M	M	No. 2 crust at 6.5 cm
734-744	.554	D	M	
744-754	.567	D	S	
754-758	.585	M	M	
758-768	.580	D	S	
768-778	.575	D	M	
778-788	.589	D	S	
788-797	.601	D	S	
797-805	.582			0-6 D packing and S grains; 6-7.5 M packing and L grains; No. 1 crust at 1.5 cm; double No. 1 crust at 2.0 cm
805-815	.586	D	S	No. 1 crust 0.5-1.5 cm
815-825	.585	D	S	
825-830	.588	D	M	
830-835	.572	D	M	
835-842	.599	D	S	
842-847	.603	D	S	No. 1 crust at 1.0 cm
847-851	.610	D	M	
851-861	.592	D	S	No. 2 crust at 0 to 1.0 cm
861-865	.601	D	S	No. 1 crust at 4.0
865-872	.570	D	S	
872-879	.602	D	S	Double No. 1 crust at 0.5 cm
879-889	.591	D	M	
889-901	.604	D	S	Double crust at 2.5 cm
901-906	.590	D	S	
906-909	.609	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
909- 916	.607	D	S	Double No. 1 crust at 1.0 cm
916- 922	.596	D	S	
922- 926	.588	D	M	
926- 930	.617	D	S	No. 1 crust at 3.0 to 4.0 cm
930- 935	.589	D	M	No. 3 crust at 4.5
935- 938	.586	M	L	
938- 950	.600	D	M	No. 1 crust at 0.0 to 1.5 cm
950- 954	.598	D	M	
954- 964	.614	D	S	No. 2 crust at 0.5 cm
964- 969	.617	D	S	
969- 973	.604	D	M	No. 2 crust at 0.5 cm
973- 977	.595	M	M	
977- 990	.649	D	S	
990-1000	.619	D	S	
1000-1010	.614	D	S	
1010-1014	.641	D	M	
1014-1018	.605	M	M	
1018-1024	.613	D	M	
1024-1026	.622	M	M	
1026-1033	.618	D	M	No. 1 crust at 5.5 cm; No. 2 crust at 6.5 cm
1033-1041	.609			0-5.5 D packing and M grains; 5.5-7.8 M packing and M grains
1014-1047	.620	D	S	
1047-1053	.601	D	M	
1053-1059	.621	D	S	Double No. 1 crust at 1.0 cm
1059-1061	.622	M	L	
1061-1066	.634	D	S	Double crust at 0.5
1066-1076	.611	D	M	
1076-1084	.626	D	S	No. 1 crust at 1.0 to 1.5 cm
1084-1089	.624	D	M	
1089-1098	.620	D	S	No. 1 crust at 7.5; melt ice

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 327	
27 November 1958	
0- 7	55
7- 10	304
10- 11	304
11- 16	454
16- 21	454
21- 24	304
24- 29	274
29- 33	94
33- 40	31
40- 47	44
47- 50	214
50- 52	304
52- 63	54
63- 68	64
68- 72	115
72- 80	62
80- 89	322
89- 98	71
98-112	48
112-121	122
121-128	262
128-135	155
135-144	87
144-149	185
149-154	155
154-171	92
171-174	205
174-180	181
180-187	156
187-195	193
195-206	142
206-213	113
213-217	156
217-223	256
223-230	283
230-235	456
235-244	606
244-251	433
251-254	306
254-260	256
260-266	306
266-274	473
274-281	542
281-287	507
287-295	382
295-304	424
304-310	532
310-318	947
318-320	757
320-324	382
324-330	182
330-332	307
332-336	307
336-339	507
339-343	419
343-350	285
350-356	307
356-364	287
364-374	307
374-378	394
378-381	407
381-389	137
389-392	457
392-397	757
397-400	707
Mile 333	
27 November 1958	
1- 6	34
6- 15	30
15- 22	55
22- 28	69
28- 33	112
33- 35	184
35- 40	219
40- 45	147
45- 52	146
52- 54	184
54- 59	76
59- 64	59
64- 69	95
69- 75	80
75- 81	50
81- 91	77
91- 97	200
97-102	65
102-109	70
109-118	105
118-123	77
123-130	70
130-138	140
138-141	95
141-149	62
149-160	209
160-168	185
168-173	217
173-180	221
180-187	113
187-192	456
192-198	631
198-202	568
202-207	156
207-214	113
214-217	156
217-220	506
220-226	306
226-231	393
231-241	456
241-251	456
251-258	476
258-266	569
266-272	473
272-277	756
277-280	1000+
280-288	2000+
288-291	457
291-294	657
294-297	807
297-302	1000+
302-306	1000
306-310	2000+
310-312	1000+
312-316	532
316-319	1000+
319-322	1000+
322-327	782
327-329	682
329-334	547
334-338	872
338-340	2000+
340-344	1000
344-354	757
354-364	757
364-373	894
373-380	1000+
380-384	569
384-395	667
395-400	1000

RAM HARDNESS DATA SHEET

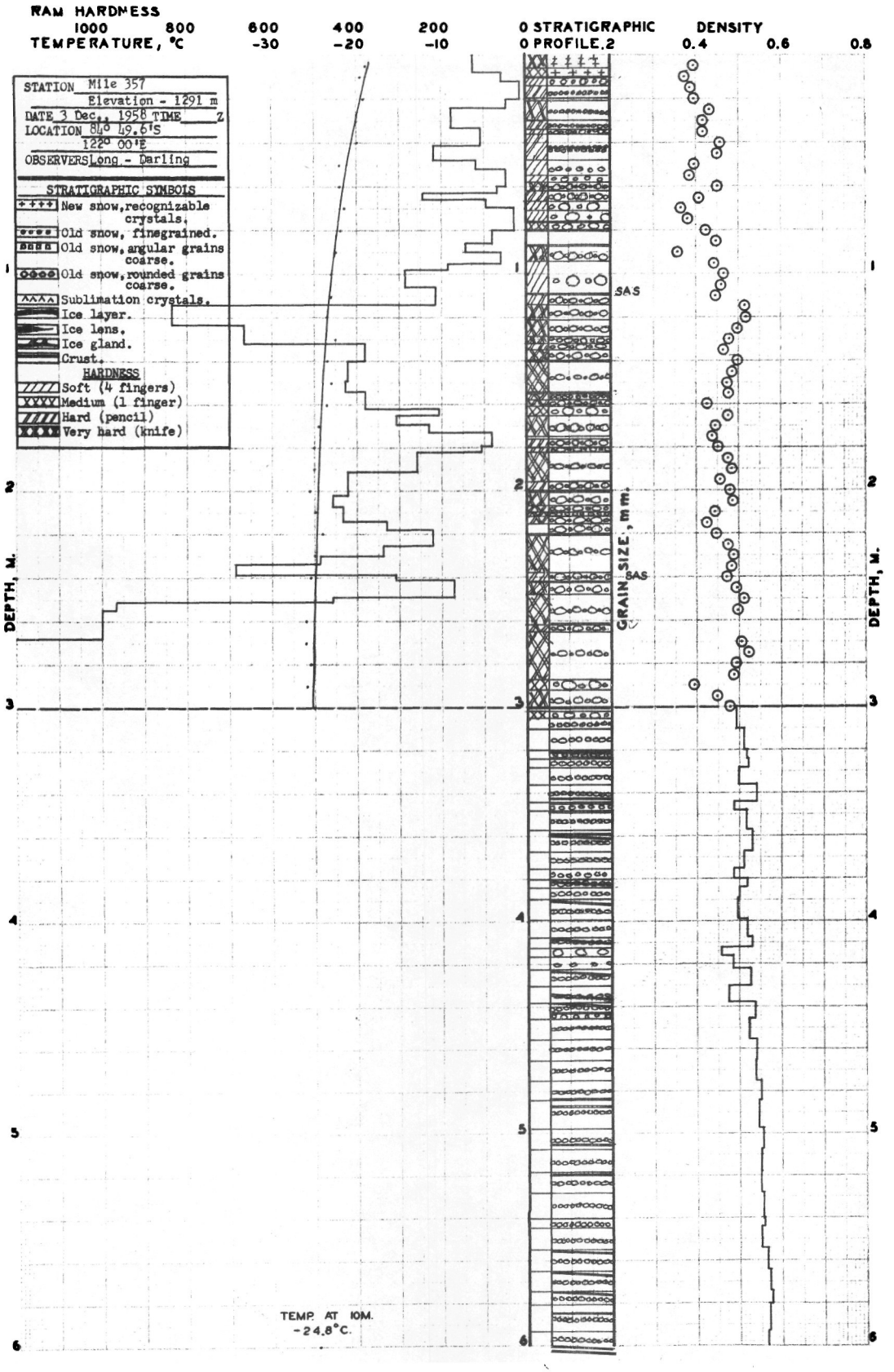
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 339	
27 November 1958	
1- 6	92
6- 9	86
9- 15	152
15- 18	197
18- 24	239
24- 30	127
30- 31	352
31- 35	89
35- 40	82
40- 44	189
44- 48	102
48- 51	117
51- 54	52
54- 58	77
58- 64	154
64- 69	166
69- 73	162
73- 76	185
76- 79	185
79- 84	77
84- 88	567
88- 90	367
90- 92	277
92- 97	77
97-103	80
103-111	129
111-114	95
114-118	297
118-123	256
123-126	245
126-129	305
129-133	163
133-140	120
140-143	185
143-144	185
144-148	411
148-157	255
157-164	326
164-168	568
168-176	306
176-186	306
186-189	306
189-193	126
193-202	373
202-205	306
205-211	406
211-216	306
216-219	406
219-227	473
227-235	473
235-243	473
243-247	381
247-252	187
252-255	206
255-260	366
260-265	366
265-270	426
270-276	632
276-278	2000+
278-283	2000+
283-288	2000+
288-291	1000+
291-294	557
294-296	832
296-304	474
304-310	632
310-316	632
316-318	607
318-325	369
325-328	507
328-336	474
336-343	542
343-346	807
346-355	1000+
355-357	2000+
357-359	1000+
359-365	632
365-369	947
369-371	1000+
371-376	2000+
376-378	2000+
378-379	4000+
379-381	5000+
Mile 345	
27 November 1958	
1- 6	52
6- 13	24
13- 19	167
19- 22	102
22- 27	52
27- 33	34
33- 41	57
41- 43	127
43- 50	110
50- 53	182
53- 58	82
58- 63	202
63- 66	152
66- 69	184
69- 76	30
76- 82	230
82- 85	185
85- 88	605
88- 91	305
91-105	230
105-110	305
110-116	130
116-125	120
125-127	380
127-136	105
136-147	682
147-150	155
150-155	95
155-164	222
164-173	420
173-175	231
175-182	91
182-190	81
190-197	434
197-200	306
200-205	156
205-212	134
212-216	231
216-222	456
222-224	306
224-229	216
229-235	631
235-242	348
242-252	306
252-259	541
259-264	756
264-266	1000+
266-271	1000+
271-274	2000+
274-280	2000+
280-285	756
285-287	606
287-291	382

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
291-293	905
293-300	627
300-303	407
303-306	507
306-311	607
311-315	569
315-320	602
320-324	947
324-327	1000+
327-331	2000+
Mile 351	
27 November 1958	
1- 7	254
7- 10	564
10- 11	754
11- 13	229
13- 16	94
16- 19	64
19- 21	34
21- 26	10
26- 28	64
28- 30	154
30- 38	150
38- 44	79
44- 50	79
50- 52	141
52- 55	244
55- 61	124
61- 68	94
68- 79	274
79- 82	35
82- 86	342
86- 90	205
90-100	110
100-105	185
105-111	180
111-117	80
117-123	205
123-131	192
131-136	155
136-139	305
139-144	305
144-151	290
151-156	362
156-161	605
161-163	305
163-168	65
168-170	380
170-176	230
176-184	211
184-192	381
192-203	346
203-207	193
207-213	256
213-218	426
218-224	1000
224-226	531
226-230	268
230-234	531
234-237	506
237-241	946
241-242	1000+
242-246	531
246-253	460
253-259	506
259-265	631
265-267	681
267-278	346
278-283	397
283-287	532
287-290	757
290-300	1000+
300-305	1000+
305-308	1000+
308-310	2000+
310-311	4000+


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC
0 PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION Mile 357
Elevation - 1291 m
DATE 3 Dec., 1958 TIME Z
LOCATION 80° 49.6'S
122° 00'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
SAS
SAS
DEPTH, M.
TEMP. AT 10M.
-24.8°C.

IGY Byrd Traverse 1958-59

Station Mile 357

Date 3 December 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

(Weather--Blowing Snow)

Depth cm	Hardness	Grain Size, mm	Remarks
0- 6	VH	.5 and less	
6- 10	M	.5 and less	
10			Granular crust
10- 14	S	.5-1.0	Extra soft
14- 20	H	.5 and less	
20- 21	S	.5-1.0	
21- 30	VH	.5 and less	
30- 34	H	.5 and less	
34- 36	H	.5-1.0	Softer than layer above
36- 48	H	.5 and less	Like 30-34
48- 55	S	.5-1.0	
55- 58	S	.5-1.0	
58- 62	VH	.5-1.5	
62- 67	H	.5-1.5	Few drip grains
67- 71	S	1.0-2.0	
71- 76	S	1.0-3.0	Drip grains
76			Crust
76- 80	M	1.0-2.0	
80			Granular crust
80- 87	VH	1.0-2.0	
87			Granular crust
87- 94	S	1.0-3.0	Drip grains
94-109	VH	.5-1.0	
109			Sastrugi surface, crust
109-114	H	.5-1.5	
114-121	VH	.5-1.0	Extra compact layer
121-129	VH	1.0-1.5	
129-132	VH	1.0-1.5	
132-135	H	1.0-2.0	
135-140	VH	1.0-2.0	Thin crust
140-155	VH	.5-1.0	Extra compact layer
155			Icy, even crust
155-158	VH	.5-1.0	Extra compact layer
158-161	VH	1.0-2.5	

Depth cm	Hardness	Grain Size, mm	Remarks
161-165	M	1.0-3.0	Few drip grains
165-175	VH	1.0-2.0	Extra compact layer
175-176	S	1.0-3.0	Many drip grains
176-180	H	1.0-2.0	
180-182	H	1.0-2.0	
182-196	VH	.5-1.0	
196-200	H	1.0-2.0	
200			Crust
200-207	VH	1.0-2.0	
207-210	VH	1.0-2.0	Softer than layer above
210-212	VH	.5-1.0	Extra compact layer
212-215	VH	1.0-2.5	Drip grains
215-220			Drip grains
220			Crust
220-238	VH	.5-1.5	Extra compact layer
238-242	H	1.0-2.0	Drip grains
242			Sastrugi surface
242-248	VH	.5-1.5	
248			Thin crust
248-262	VH	.5-1.0	Extra compact layer
262-265	VH		Too hard to penetrate
265-287	VH	.5-1.0	Extra compact layer
287-292	M	1.0-4.0	
292-302	VH	.5-1.0	Extra compact
302-305	M	1.0-3.0	

IGY Byrd Traverse 1958-59

Station Mile 357

Date 2 December 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
300-310	.491	D	S	No. 1 crust at 0.5 cm
310-320	.510	D	S	
320-324	.519	M	S	No. 2 crust at 0.5 to 4.0 cm; break at 2.0 cm
324-328	.520	D	S	
328-336	.499	D	S	
336-344	.540	D	S	No. 3 and No. 2 crust at 7.0 cm
344-348	.486	M	S	No. 3 crust at 0.5 cm
348-357	.518	D	S	No. 1 crust at 0.5 cm
357-367	.530	D	S	Many No. 2 crusts at 1.0 cm; No. 1 crust at 1.5 to 2.0
367-375	.511	D	S	
375-380	.487	M	S	
380-384	.519	D	S	No. 1 crust at 1.0 to 2.0 cm
384-389	.500	D	S	Irregular diameter
389-399	.497	D	S	No. 1 crust at 0.5 to 1.7 cm; 5-6 cm medium and small
399-407	.517	D	S	
407-412	.530	D	S	No. 1 crust at 0.0 to 2.5 cm
412-416	.458	L	M	
416-422	.485	L	S	
422-430	.525	D	S	Triple No. 3 crust at 0.0 to 0.5 cm
430-437	.476	M	S	No. 1 crust at 5.8 to 6.6 cm
437-445	.537			0-5.0 D packing and S grain size; 5.0-8.0 cm M packing and S grain size; No. 1 crust at 0.0 to 1.4 cm; double No. 2 crust at 5.0 cm
445-455	.523	D	S	
455-465	.540	D	S	
465-475	.539	D	S	
475-484	.550	D	S	No. 2 crust at 9.0 cm
484-497	.545	D	S	No. 3 crust at 3.6 cm
497-507	.553	D	S	No. 2 crust at 7.0 cm
507-518	.550	D	S	
518-528	.550	D	S	No. 1 crust at 0.5 cm
528-540	.554	D	S	
540-544	.555	D	S	
544-554	.550	D	S	
554-564	.564	D	S	
564-574	.570	D	S	No. 1 crust at 0.7 to 1.7 cm
574-580	.573	D	S	No. 1 crust at 5.5 to 5.8 cm
580-593	.568	D	S	
593-602	.566	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
602-613	.570	D	S	No. 2 crust at 9.0 to 10.2; No. 1 crust at 11.9
613-623	.566	D	S	No. 1 crust at 0.0 to 1.3 cm
623-631	.573	D	S	No. 2 crust at 4.0 cm
631-639	.576	D	S	
639-647	.571	D	S	No. 3 crust at 3.0 and 3.8 cm
647-657	.575	D	S	
657-660	.558	M	S	No. 1 crust at 2.0 to 2.5 cm
660-670	.560	D	S	
670-675	.569	D	S	No. 1 crust at 1.6 to 2.3 cm; No. 1 crust at 3.7 cm
675-679	.562	M	S	Double No. 2 crust at 0.0 to 1.5 cm; No. 3 crust at 2.8 cm
679-689	.596	D	S	
689-699	.583	D	S	
699-707	.599	D	S	No. 1 crust at 7.5 cm
707-717	.565	D	S	
717-723	.576	D	S	
723-731	.571	D	S	
731-734	.511	M	S	No. 1 crust at 2.0 to 3.8 cm
734-740	.582	D	S	
740-750	.586	D	S	
750-758	.593	D	S	No. 1 crust at 4.5 to 5.5 cm; double No. 1 crust at 6.0 to 7.6 cm
758-768	.583	D	S	
768-778	.577	D	S	No. 3 crust at 5.5 cm
778-784	.576	D	S	
784-794	.581	D	S	
794-804	.584	D	S	No. 3 crust at 5.0 cm
804-808	.605	D	S	No. 1 crust at 1.8 to 3.8 cm; sastrugi surface
808-817	.575			0.0-5.5 D packing and S grain size; 5.5-9.9 M packing and S grain size
817-824	.561	M	S	Break at 4.5 cm
824-833	.597	D	S	No. 1 crust at 0.5 cm; No. 2 crust at 6.5 cm
833-845	.599	D	S	
845-852	.599	D	S	No. 1 crust at 0.5 cm; No. 1 crust at 4.5 cm; No. 1 crust at 5.5 to 6.0 cm
852-857	.571	M	S	
857-867	.588	D	S	
867-874	.582	D	S	No. 3 crust at 6.8 cm
874-880	.588	D	S	
880-890	.598	D	S	
890-900	.591	D	S	
900-905	.607	D	S	No. 2 crust at 4.5 cm
905-915	.598	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
915- 918	.593	D	S	
918- 920	.561	M	S	No. 2 crust at 2.7 cm
920- 930	.599	D	S	
930- 936	.590	D	S	
936- 944	.606	D	S	No. 2 crust at 1.5 to 2.3 cm; No. 3 crust at 3.5 cm
944- 954	.598	D	S	
954- 964	.599	D	S	
964- 967	.595	D	S	
967- 971	.610	D	S	
971- 973	.589	M	S	
973- 981	.594	M	S	
981- 986	.589	M	S	
986- 992	.606	D	M	Double No. 1 crust at 0.5 cm; double No. 1 crust at 1.5 to 2.0 cm
992- 996	.588	D	M	No. 2 crust at 0.1 cm
996-1000	.590	M	M	
1000-1005	.592	D	M	No. 2 crust at 2.0 cm
1005-1010	.608	D	S	
1010-1015	.604	D	S	No. 1 crust at 3.7 to 4.9 cm
1015-1025	.605	D	S	
1025-1033	.610	D	S	
1033-1038	.622	D	S	No. 1 crust at 0.0 to 0.5 cm
1038-1043	.616	D	S	No. 1 crust at 0.1 cm; No. 2 crust at 4.5 cm
1043-1048	.616	D	M	
1048-1051	.623	D	S	
1051-1058	.616	D	S	Double No. 1 crust at 0.0 to 1.2 cm
1058-1067	.620	D	S	
1067-1069	.603	M	M	
1069-1078	.628	D	S	
1078-1082	.628	D	S	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 363	
3 December 1958	
0- 9	37
9- 11	154
11- 14	94
14- 23	34
23- 30	16
30- 35	59
35- 43	106
43- 50	159
50- 56	154
56- 59	184
59- 65	34
65- 70	112
70- 77	68
77- 81	72
81- 86	95
86- 93	82
93- 97	230
97-104	160
104-107	275
107-109	455
109-114	305
114-118	193
118-123	185
123-127	230
127-133	130
133-140	133
140-146	105
146-148	230
148-150	80
150-156	505
156-157	905
157-162	155
162-168	55
168-173	66
173-179	105
179-185	356
185-190	246
190-198	381
198-208	381
208-216	631
216-223	591
223-227	306
227-231	193
231-237	106
237-241	81
241-246	456
246-249	1000+
249-253	568
253-259	631
259-265	631
265-269	681
269-272	356
272-275	256
275-280	246
280-285	353
285-293	382
293-300	327
300-307	477
307-308	757
308-312	232
312-318	382
318-322	457
322-327	757
327-331	957
331-335	484
335-337	907
337-342	367
342-344	757
344-348	757
348-351	357
351-355	307
355-357	532
357-360	557
360-363	507
363-366	507
366-368	532
368-373	367
373-376	357
376-378	682
378-382	957
382-385	1000+
385-388	757
388-389	907
389-392	457
392-397	307
397-400	407
Mile 369	
3 December 1958	
0- 3	94
3- 4	184
4- 13	34
13- 16	84
16- 20	64
20- 24	54
24- 25	184
25- 33	566
33- 35	316
35- 39	184
39- 43	71
43- 52	24
52- 58	34
58- 65	69
65- 72	59
72- 75	122
75- 82	160
82- 85	185
85- 90	275
90- 93	185
93- 99	185
99-102	155
102-109	245
109-112	185
112-119	187
119-121	455
121-123	605
123-124	305
124-131	69
131-133	80
133-144	345
144-150	305
150-154	343
154-158	945
158-162	945
162-164	605
164-168	183
168-176	172
176-184	117
184-188	343
188-192	306
192-195	1000+
195-197	1500+
197-199	1500+
199-203	531
203-209	631
209-212	406
212-218	131
218-223	156
223-231	248

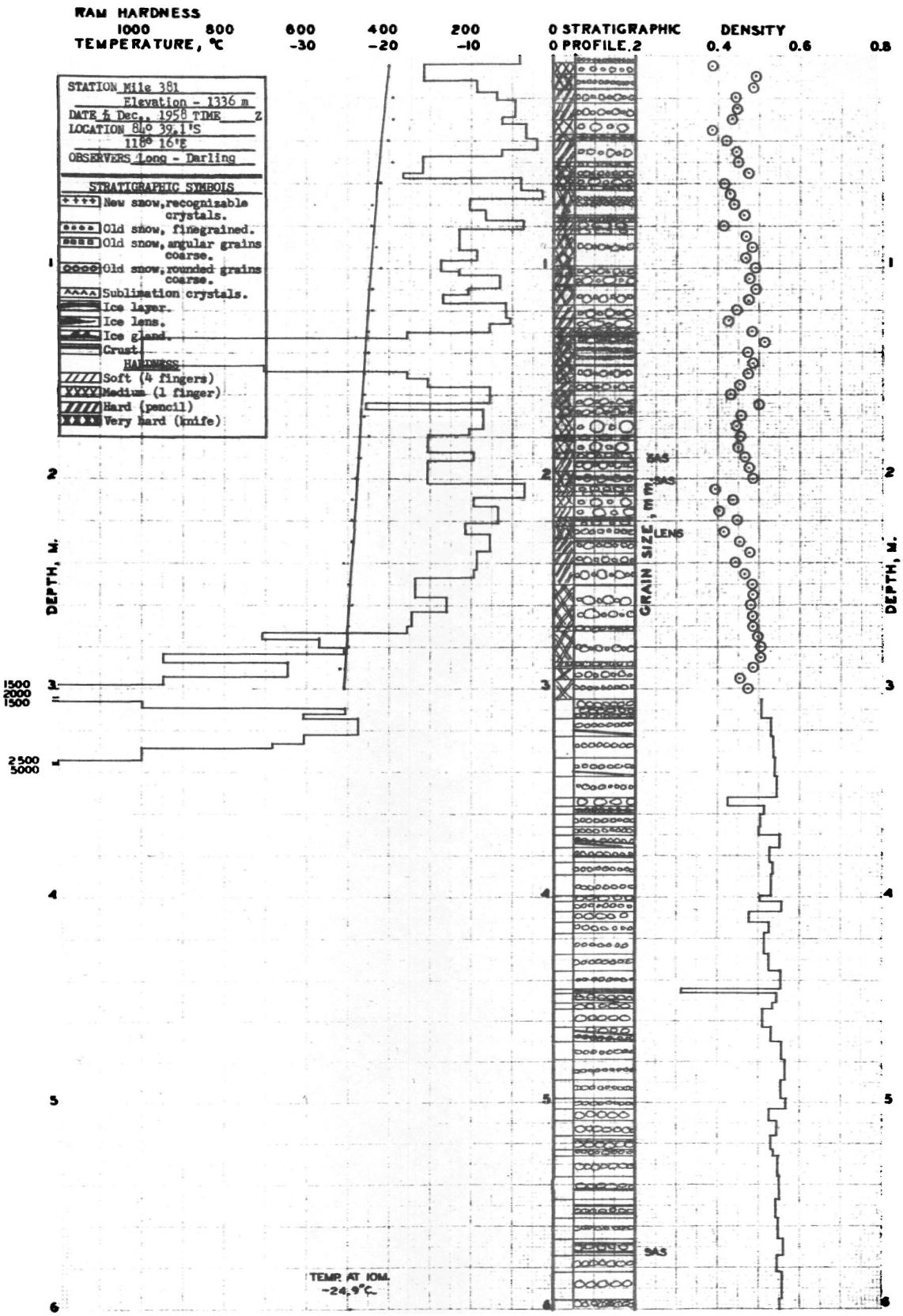
RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
231-235	306
235-244	273
244-251	348
251-253	1500+
253-254	2000+
254-256	1500+
256-258	1500+
258-262	946
262-266	756
266-271	756
271-275	946
275-281	631
281-286	757
286-294	474
294-303	847
303-308	1000+
308-312	947
312-316	382
316-321	577
321-325	382
325-329	947
329-333	947
333-338	757
338-340	1000
340-346	1000
346-350	457
350-354	494
354-358	419
358-364	307
364-368	344
368-371	607
371-377	632
377-379	832
379-387	474
387-391	607
391-395	532
395-400	687

Mile 375
3 December 1958

Depth cm	Hardness Number, Kg
0- 9	71
9- 14	64
14- 17	74
17- 22	52
22- 27	22
27- 29	184
29- 35	199
35- 39	94
39- 46	69
46- 51	94
51- 55	116
55- 60	146
60- 65	76
65- 72	31
72- 80	39
80- 85	60
85- 90	167
90- 93	125
93- 99	95
99-106	455
106-110	95
110-116	95
116-122	170
122-125	605
125-127	905
127-130	505
130-133	205
133-137	193
137-141	42
141-143	305
143-146	905
146-148	305
148-153	125
153-161	80
161-164	305
164-169	755
169-174	605
174-176	455
176-180	230
180-185	155
185-191	155
191-198	132
198-202	344
202-204	531
204-209	366
209-215	231
215-223	381
223-229	506
229-234	724
234-242	363
242-246	418
246-249	1000+
249-251	1000+
251-256	306
256-260	418
260-265	606
265-271	1000+
271-277	456
277-282	276
282-287	367
287-290	169
290-295	1000+
295-300	757
300-310	757
310-318	477
318-322	607
322-327	757
327-331	1000+
331-336	757
336-342	631
342-346	531
346-353	1000
353-362	517
362-372	757
372-379	1000
379-383	1000+
383-390	2000+
390-393	657
393-400	541


RAM HARDNESS
1000
800
TEMPERATURE, °C
600
-30
400
-20
200
-10
0 STRATIGRAPHIC
0 PROFILE 2
DENSITY
0.4
0.6
0.8
STATION Mile 381
Elevation - 1336 m
DATE 4 Dec., 1958 TIME Z
LOCATION 81° 39.1'S
116° 16'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm
SAS
SAS
LENS
SAS
1500
2000
1500
2500
5000
TEMP. AT 10M.
-24.9°C.

IGY Byrd Traverse 1958-59

Station Mile 381

Date 4 December 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 3	H	.5 and less	
3- 9	M	.5-1.0	
9- 15	VH	.5-1.0	
15- 22	H	1.0-1.5	
22- 30	H	1.0-1.5	Harder than layer above
30- 37	M	1.0-2.0	
38			Granular crust
37- 40	VH	1.0-1.5	
40- 50	H	1.0-2.0	Drip grains
50- 52	H	1.0-2.5	Harder than layer above
52- 57	VH	1.0-1.5	
57- 61	M	1.0-2.0	Drip grains
61- 63	S	1.0-3.0	Drip grains
63- 75	VH	1.0	
75- 76	M	1.0-2.0	
76			Granular crust
76- 78	VH	1.0-2.0	
78- 81	S	2.0-5.0	Loose layer, many long drip grains
81- 84	S	2.0-4.0	Drip grains, harder than layer above
84- 99	VH	1.0-2.0	
99-103	VH	.5-1.5	Harder than layer above
103-107	H	1.0-2.5	Drip grains
107			Sastrugi surface, crust
107-117	VH	1.0-2.0	
117-123	H	1.0-2.0	
123-128	H	1.0-4.0	Softer than layer above, drip grains
130			Crust
128-131	VH	1.0-2.0	
131-135	VH	1.0-2.5	Drip grains; softer than layer above
135-145	VH	.5-1.0	Extra compact layer
146			Granular crust
145-154	VH	1.0-2.0	
154-158	H	1.0-2.0	
158-165	VH	1.0-1.5	
165-170	VH	.5-1.5	Extra compact layer
170-179	M	1.0-3.0	Drip grains
179-181	M	2.0-4.0	
181-187	M	1.0-3.0	Drip grains
187-190	H	1.0-2.0	
190-196	H	1.0-2.0	Harder than layer above
191			Sastrugi surface and crust

Depth cm	Hard-ness	Grain Size, mm	Remarks
196-203	VH	1.0-2.0	
199			Crust
203			Crust, sastrugi surface
203-206	M	1.0-2.0	
206-208	S	2.0-8.0	Loose, sublimation crystals
208-213	M	1.0-2.5	
213-218	S	1.0-4.0	Drip grains
218-220	VH	1.0-2.5	
219			Crust
220-222	M	1.0-3.0	Drip grains
222-228	VH	1.0-1.5	Lensatic layer
229			Crust
228-235	H	1.0-4.0	Drip grains
235			Crust, sastrugi surface
235-240	H	1.0-2.0	Harder than 228-235
240-250	H	1.0-3.0	
250			Thin crust
250-270	VH	1.0-2.5	
270-272	H	1.0-2.0	
272-287	VH	1.0-2.0	Few drip grains
287-289	VH	1.0-1.5	Softer than layer above
289-290	H	1.0-2.5	Drip grains
290-295	VH	1.0-3.0	Drip grains
295-306	VH	.5-1.5	Extra compact layer

IGY Byrd Traverse 1958-59

Station Mile 381

Date 4 December 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
305-314	.507			0-4 D packing and M grains; 4-7 M packing M grain size; 7.0-9.4 D packing and S grain size
314-323	.530	D	S	No. 1 crust at 6.5 to 8.2 cm
323-333	.535	D	S	
333-342	.540	D	S	No. 2 crust at 7.7 to 9.0 cm
342-352	.545	D	S	
352-356	.425	L	L	3-4 dense and small; break at 1.5
356-360	.512	M	S	No. 1 crust at 3.0 cm; No. 3 crust at 2.0 cm
360-366	.503	D	S	
366-370	.502	D	S	
370-376	.551	D	S	No. 2 crust at 3.3 to 4.5; No. 1 crust at 4.0 to 5.0
376-383	.527	D	S	No. 3 crust at 4.0
383-389	.535	D	S	
389-399	.533	D	S	
399-402	.504	M	M	
402-407	.555	D	S	
407-412	.477	M	M	
412-417	.524	M	S	
417-427	.515	M	S	
427-435	.527	D	S	
435-444	.553	D	S	Break at 3.0
444-446	.314			Double No. 1 crust
446-451	.545	M	M	No. 2 crust at 3.0 to 4.5
451-454	.536	M	M	
454-463	.510	M	M	
463-470	.530			0 to 1.5/3.8 M packing and M grain size; 1.5/3.8 to 4.9/5.9 D packing and S grain size; No. 2 crust at 1.5 to 3.8; No. 1 crust at 4.9/5.9 to 6.1 cm
470-479	.556	D	S	
479-489	.564	D	S	
489-498	.556	D	S	
498-503	.567	D	S	
503-509	.527	M	M	
509-516	.543	D	M	
516-523	.530	M	M	No. 3 crust at 2.0 cm
523-526	.534	M	M	No. 1 crust at 2.1 to 3.1 cm
526-536	.548	D	S	
536-547	.550	D	M	
547-556	.541	D	M	No. 2 crust at 6.4 cm

Depth cm	Density	Packing	Grain Size	Remarks
556-566	.549	D	S	No. 3 crust at 1.5 cm; No. 2 crust at 6.3 cm
566-574	.559	D	S	
574-582	.546	M	M	No. 3 crust at 3.6 cm; double No. 1 crust at 6.5 cm (sastrugi surface)
582-589	.534	D	M	
589-595	.554	M	M	Break at 4.0 cm
595-605	.554	D	M	
605-615	.551	D	M	No. 2 crust at 0.0 to 1.0, sastrugi surface
615-622	.554	D	S	
622-630	.579	D	S	
630-640	.564	D	S	No. 1 crust at 0.5 cm
640-643	.538	D	M	
643-648	.577	D	S	
648-658	.558	D	M	No. 2 crust at 9.5 cm
658-668	.592	D	S	No. 1 crust at 7.5 to 9.0 cm; No. 2 crust at 10.0 cm; partial crust at 8.3 cm
668-678	.579	D	S	No. 2 crust at 1.4 to 2.3 cm
678-685	.583	D	S	
685-691	.584	D	M	
691-702	.575	D	S	
702-712	.576	D	S	
712-720	.572	D	M	Double No. 1 crust at 7.2 to 8.1 cm
720-738	.562	D	M	
738-745	.588	D	M	
745-748	.569	M	M	
748-751	.651	M	M	Double No. 1 crust at 2.6 to 3.3 cm
751-761	.568	D	M	
761-769	.579	D	S	No. 1 crust at 2.6 to 3.3 cm; No. 1 crust at 5.0 to 7.0 cm
769-779	.581	D	M	
779-780				No. 1 crust
780-793	.583	D	S	No. 1 crust at 0.5 to 1.5 cm; No. 2 crust at 2.0 cm; break at 1.5 cm
793-798	.588	D	M	
798-800	.556			0-1.3/2.5 L packing and M grains; 1.3/2.5 to 2.6 cm D packing and M grain size; No. 1 crust at 1.3 to 2.5 cm
800-810	.587	D	S	
810-818	.595	D	M	No. 1 crust at 2.4 cm; No. 1 crust 3.4 to 4.5 cm (sastrugi surface)
818-828	.581	D	M	
828-838	.603	D	S	
838-848	.617	D	S	No. 1 crust at 6.3 to 6.8 cm; No. 3 crust at 7.0 cm
848-857	.609	D	S	
857-867	.610	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
867- 877	.609	D	S	
877- 885	.615	D	S	No. 1 crust at 1.0 to 1.5 cm
885- 889	.611	D	M	
889- 898	.610	D	M	
898- 908	.607	D	S	
908- 917	.613	D	M	No. 1 crust at 7.6 to 8.7 cm
917- 928	.613	D	S	No. 1 crust at 0.4 to 1.3 cm
928- 935	.606	D	M	Double No. 1 crust at 1.5 to 2.0 cm; No. 1 crust (sastrugi) 4.4 to 5.5 cm
935- 940	.625	D	S	
940- 948	.575	M	M	
948- 958	.607	D	M	Double No. 1 crust at 0.0 to 0.5 cm
958- 965	.608	D	M	
965- 975	.622	D	S	
975- 985	.602	D	M	
985- 996	.609	D	M	
996-1006	.618	D	S	
1006-1015	.625	D	S	No. 3 crust at 2.0 cm; No. 2 crust at 7.6 to 8.3 cm
1015-1025	.632	D	S	
1025-1035	.622	D	M	No. 1 crust at 2.0 cm
1035-1048	.617	D	M	No. 2 crust at 8.0 to 9.0 cm
1048-1058	.618	D	M	
1058-1062	.617	M	M	No. 2 crust at 3.3 to 4.1 cm
1062-1068	.598	D	M	
1068-1078	.607	D	M	
1078-1090	.616			No. 1 crust at 0.5 to 2.5; break at 9.5 cm

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 387	
5 December 1958	
0- 6	64
6- 10	56
10- 26	26
26- 28	124
28- 35	110
35- 42	247
42- 47	77
47- 59	29
59- 65	94
65- 68	274
68- 70	454
70- 74	185
74- 78	73
78- 81	35
81- 87	110
87- 96	115
96-100	185
100-104	275
104-112	230
112-119	107
119-120	455
120-128	305
128-134	380
134-141	219
141-146	425
146-150	305
150-153	255
153-156	305
156-161	185
161-168	540
168-183	105
183-191	248
191-195	231
195-203	213
203-210	286
210-217	414
217-221	194
221-227	131
227-232	306
232-237	216
237-241	268
241-245	306
245-249	344
249-255	631
255-258	996
258-264	631
264-268	681
268-274	456
274-281	541
281-286	669
286-291	457
291-294	557
294-299	757
299-301	2000
301-302	2500+
302-303	5000+
303-304	5000+
Mile 393	
5 December 1958	
0- 12	50
12- 15	104
15- 20	124
20- 23	64
23- 37	24
37- 47	112
47- 52	113
52- 67	11
67- 72	59
72- 76	94
76- 83	135
83- 90	45
90- 94	117
94- 98	117
98-104	65
104-108	73
108-111	35
111-116	185
116-119	185
119-127	85
127-135	117
135-139	117
139-142	125
142-147	203
147-152	185
152-156	73
156-158	185
158-159	905
159-166	635
166-168	530
168-172	193
172-180	230
180-185	216
185-192	368
192-199	348
199-207	398
207-211	381
211-215	156
215-219	194
219-224	336
224-228	306
228-231	256
231-238	156
238-242	118
242-246	831
246-247	756
247-251	306
251-257	106
257-263	306
263-270	198
270-276	256
276-284	567
284-290	707
290-293	757
293-299	507
299-304	607
304-309	757
309-314	757
314-318	947
318-321	1000+
321-323	1500+
323-325	1500+
325-328	1500+
328-331	657
331-338	327
338-343	757
343-348	757
348-352	947
352-354	1500+
354-355	2500+
355-356	5000+
356-357	5000+
Mile 399	
5 December 1958	
1- 10	37
10- 13	186
13- 19	214
19- 22	394

RAM HARDNESS DATA SHEET

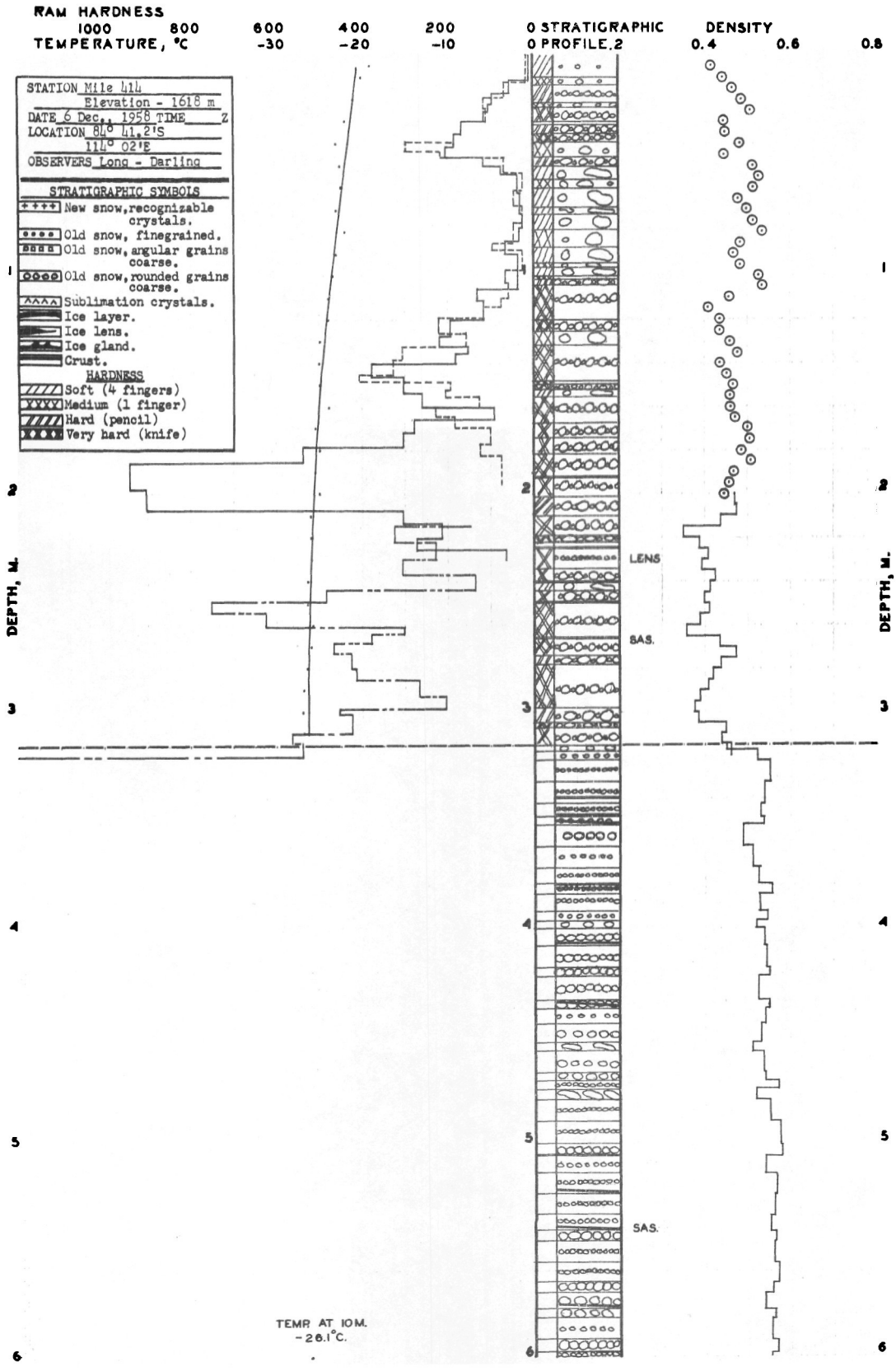
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
22- 28	379	272-276	946	100-103	125
28- 35	324	276-279	356	103-109	125
35- 38	334	279-282	1000+	109-111	275
38- 42	139	282-287	1000+	111-115	230
42- 48	79	287-291	682	115-123	85
48- 52	229	291-296	307	123-134	200
52- 58	199	296-303	435	134-138	73
58- 61	154	303-306	507	138-147	35
61- 68	106	306-310	947	147-149	680
68- 76	39	310-313	1000+	149-156	630
76- 78	274	313-314	2500+	156-162	280
78- 86	555	314-318	1250+	162-168	305
86- 95	545	318-320	831	168-173	455
95- 99	193	320-327	545	173-179	406
99-105	105	327-332	757	179-187	194
105-109	267	332-336	569	187-192	216
109-120	167	336-343	1000+	192-200	286
120-125	155	343-346	407	200-204	156
125-138	133	346-348	607	204-208	156
138-147	122	348-354	407	208-212	946
147-153	180	354-359	607	212-213	2500+
153-159	530	359-362	857	213-216	1000+
159-167	213	362-369	435	216-224	476
167-171	417	369-375	432	224-228	418
171-174	755	375-377	1500+	228-233	606
174-179	755	377-378	5000+	233-239	381
179-184	246	378-378	Inf.	239-245	256
184-190	181			245-250	1250+
190-194	344	Mile 405		250-252	756
194-199	216	5 December 1958		252-255	356
199-202	1000+	0- 4	101	255-262	220
202-203	2500+	4- 9	28	262-269	306
203-206	756	9- 15	28	269-273	194
206-211	366	15- 17	154	273-274	606
211-215	381	17- 24	172	274-279	756
215-219	231	24- 35	86	279-285	631
219-226	156	35- 38	124	285-290	607
226-230	381	38- 47	34	290-293	457
230-238	381	47- 58	36	293-296	407
238-242	494	58- 64	79	296-305	239
242-246	756	64- 69	59	305-310	517
246-252	631	69- 75	94	310-319	497
252-256	946	75- 82	82	319-325	632
256-259	1000+	82- 85	155	325-328	607
259-265	1000+	85- 87	455	328-337	340
265-267	1500+	87- 93	155	337-342	307
267-272	1250+	93-100	145	342-345	607

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
345-348	657
348-354	631
354-359	907
359-362	1000+
362-369	1000+
369-373	1500+
373-378	1250+
378-381	2000+
381-389	952
389-400	682
Mile 411	
5 December 1958	
1- 7	34
7- 17	24
17- 25	61
25- 27	184
27- 30	274
30- 34	163
34- 39	94
39- 45	64
45- 50	94
50- 55	130
55- 62	44
62- 69	44
69- 79	130
79- 81	140
81- 86	60
86- 89	215
89- 98	195
98-101	95
101-107	95
107-112	78
112-116	365
116-129	170
129-131	185
131-134	185
134-140	80
140-150	113
150-157	146
157-159	230
159-162	245
162-166	343
166-172	245
172-176	253
176-181	95
181-186	222
186-194	175
194-203	424
203-211	474
211-217	506
217-225	381
225-230	396
230-235	246
235-244	256
244-250	356
250-254	194
254-263	188
263-274	346
274-279	366
279-281	532
281-290	239
290-296	382
296-304	475
304-307	307
307-315	307
315-322	369
322-325	407
325-333	419
333-340	285
340-344	345
344-348	947
348-350	1500+
350-359	782
359-370	682
370-376	1000+
376-396	1250+


RAM HARDNESS
1000 800 600 400 200 0
TEMPERATURE, °C -30 -20 -10 0
STRATIGRAPHIC PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 414
Elevation - 1618 m
DATE 6 Dec., 1958 TIME Z
LOCATION 84° 41.2'S
114° 02'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
LENS
SAS.
SAS.
TEMP. AT 10M.
-26.1°C.

IGY Byrd Traverse 1958-59

Station Mile 414

Date 6 December 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 10	S	.5-1.0	
10- 13	M	.5-2.0	Drip grains
13- 21	H	.5-1.0	
21- 23	M	.5-1.5	Drip grains
23- 30	VH	1.0-2.0	
30- 31	M	1.0-2.5	Drip grains
31- 35	H	1.0-2.0	
35- 39	VH	1.0-2.0	
39- 46	M	1.0-3.0	Drip grains
46- 50	H	1.0-3.0	Drip grains
50- 56	S	2.0-6.0	Many drip grains
56- 60	M	1.0-3.0	Drip grains
60- 69	S	2.0-8.0	
69- 72	S	2.0-6.0	Many drip grains, softer than layer above and below
72- 79	S	2.0-4.0	Drip grains
79- 87	M	1.0-4.0	Drip grains
87- 94	S	2.0-6.0	
94- 96	M	1.0-3.0	
96-100	S	2.0-6.0	Drip grains
100-111	M	1.0	
111-114	H	1.0-3.0	Few drip grains
114-120	VH	1.0-2.0	
120-125	VH	1.0-2.0	Few drip grains
125-131	M	2.0-4.0	Drip grains
131-148	VH	1.0-2.0	
148-149	M	2.0-5.0	
149-152	VH	1.0-1.5	
152-155	S	2.0-6.0	Drip grains
155-167	VH	1.0-2.0	
167-174	VH	1.0-2.0	
174-181	VH	1.0-2.0	Harder than two layers above
181-192	VH	1.0-2.0	Extra hard layer
192			Thin crust
192-201	VH	1.0-1.5	Extra hard layer
201-210	H	1.0-3.0	
210-219	VH	1.0-2.0	
219-222	VH	1.0-3.0	
222-224	H	1.0-2.5	Drip grains
224			Crust
224-234	VH	<1.0	Extra compact, lensatic layer
234-240	VH	1.0-2.0	

Station Mile 414 (Continued)

Depth cm	Hardness	Grain Size, mm	Remarks
240			Crust
240-244	S	2.0-6.0	
244-249	VH	1.0-3.0	
249			Crust
249-266	VH	1.0-2.0	Harder than 244-249 and 266-274
266			Thin sastrugi crust
266-274	VH	1.0-2.0	
274-278	H	1.0-2.5	
278-298	VH	1.0-2.0	
298-307	H	1.0-3.0	
307-315	VH	1.0-2.0	

IGY Byrd Traverse 1958-59

Station Mile 414

Date 6 December 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
315-318	.443	L	M	
318-323	.518	M	S	
323-333	.549	D	S	
333-343	.535	D	S	No. 3 crust at 6.7 cm
343-349	.527	D	S	No. 2 crust at 5.1 cm
349-352	.532	M	S	No. 1 crust at 2.0 to 2.5 cm
352-362	.486	M	M	
362-372	.509	M	S	
372-379	.523	D	S	
379-384	.551	D	S	Double No. 1 crust at 0.0 to 1.2 cm; No. 3 crust at 3.2 cm
384-392	.527	D	S	
392-396	.542	M	S	
396-400	.517	M	M	
400-408	.537	D	M	No. 3 crust at 7.0 cm
408-418	.542	D	M	
418-422	.549	D	M	
422-433	.524	D	M	
433-437	.550	D	M	No. 1 crust at 1.5 to 3.0 cm
437-444	.541	M	S	
444-453	.528	M	M	
453-457	.507	L	L	Break at 2.0 cm
457-467	.535	M	M	
467-471	.539	M	M	
471-475	.568	D	S	
475-480	.519	M	L	
480-490	.548	D	S	
490-501	.571	D	S	
501-506	.575	D	M	No. 3 crust at 0.7 cm
506-514	.540	M	S	
514-524	.565	D	S	No. 1 crust at 9.0 to 9.5 cm
524-534	.562	D	S	
534-541	.551	D	S	No. 2 crust at 6.2 to 7.5 (sastrugi surface)
541-546	.562	D	M	
546-556	.560	D	S	
556-565	.570	D	S	
565-570	.557	D	M	
570-578	.538	M	M	No. 2 crust at 6.0 to 7.5 cm
578-582	.562	M	M	
582-592	.556	M	S	
592-598	.569	D	M	
598-601	.556	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
601-603	.530	M	M	
603-608	.499	L	L	
608-614	.558	M	M	
614-621	.549	M	M	
621-631	.564	D	M	
631-639	.525	M	L	
639-648	.562	M	M	No. 1 crust at 9.3 to 9.9 cm
648-652	.556	M	M	
652-659	.554	D	M	
659-683	.546	M	L	
683-691	.570	D	M	
691-694	.574	M	M	No. 2 crust at 2.6 cm
694-699	.534	L	L	Break at 2.0 cm
699-706	.552	M	M	
706-713	.565	D	M	
713-719	.598	D	S	
719-729	.576	D	M	
729-739	.573	D	M	
739-745	.573	D	M	
745-748	.562	M	L	
748-751	.588	M	M	
751-755	.576	M	M	
755-766	.585	D	M	
766-770	.589	M	M	
770-775	.592	M	L	
775-785	.596	D	S	No. 1 crust at 0.0 to 0.7 cm
785-795	.596	D	M	No. 2 crust at 1.5 cm
795-804	.592	D	M	
804-814	.591	D	M	
814-824	.594	M	M	No. 1 crust at 0.0 to 0.8 (sastrugi surface); No. 2 crust at 3.8 cm
824-834	.594	D	M	
834-839	.583	D	M	
839-847	.619	D	M	No. 1 crust at 2.0 to 5.1 (sastrugi surface)
847-857	.600	D	S	
857-860	.616	D	M	
860-868	.612	D	S	No. 1 crust at 7.0 to 7.5 cm; No. 3 crust at 5.9 cm
868-878	.603	D	M	No. 2 crust at 5.8 cm
878-884	.596	D	M	
884-894	.598	D	M	
894-905	.602	D	M	
905-909	.612	D	S	
909-914	.625	D	M	
914-924	.623	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
924- 931	.620	D	S	
931- 939	.610	D	S	No. 1 crust at 0.6 to 1.5 cm; No. 2 crust at 5.0 to 7.6 cm
939- 948	.621	D	S	
948- 955	.610	D	M	No. 2 crust at 1.0 cm
955- 965	.607	D	M	
965- 975	.616	D	M	
975- 985	.613	D	M	No. 1 crust at 4.2 to 4.7 cm; No. 3 crust at 7.7 to 8.9 cm
985- 990	.619	D	M	
990- 998	.627	D	S	
998-1008	.624	D	S	No. 1 crust at 4.5 cm
1008-1017	.620	D	S	
1017-1021	.605	M	M	
1021-1029	.626	D	S	
1029-1036	.616	D	S	No. 1 crust at 0.0 to 0.5 cm; No. 2 crust at 6.5 cm
1036-1045	.626	D	M	
1045-1054	.618	D	M	
1054-1058	.638	M	M	No. 1 crust at 3.9 cm
1058-1064	.625	D	M	
1064-1068	.619	M	M	No. 1 crust at 4.0 cm
1068-1076	.618	D	M	No. 2 crust at 8.1 to 8.6 cm
1076-1086	.610	M	M	
1086-1092	.612	D	M	
1092-1101	.618	D	M	
1101-1104	.605	M	M	

RAM HARDNESS DATA SHEET

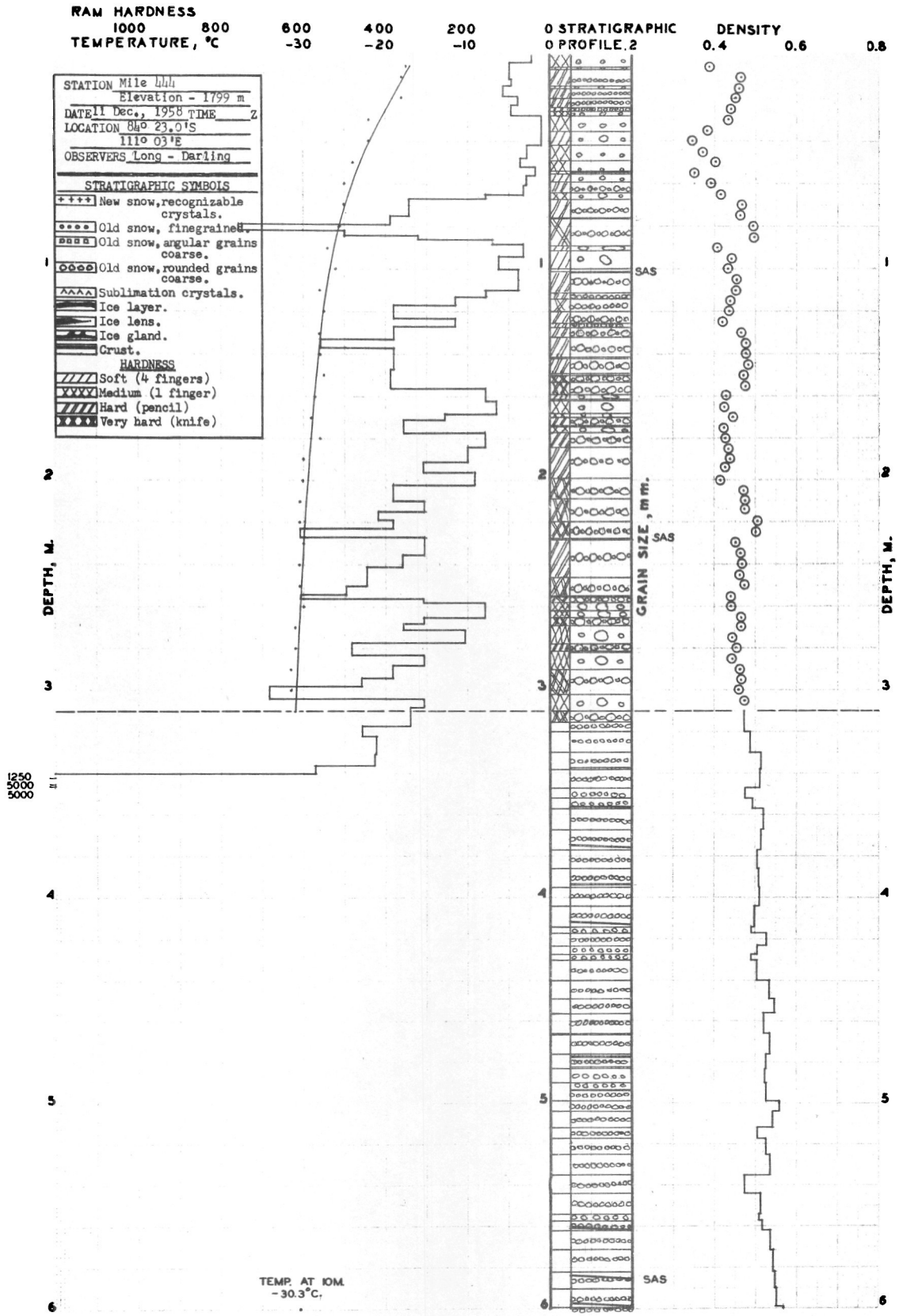
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 426	
10 December 1958	
0- 16	48
16- 20	56
20- 22	64
22- 26	116
26- 29	134
29- 35	154
35- 39	116
39- 50	94
50- 53	124
53- 63	104
63- 69	139
69- 81	80
81- 87	110
87- 91	95
91- 98	57
98-107	155
107-112	238
112-115	455
115-121	305
121-126	155
126-135	80
135-144	171
144-151	135
151-153	230
153-160	530
160-163	405
163-167	155
167-172	95
172-178	255
178-184	306
184-191	198
191-197	256
197-207	756
207-212	756
212-220	436
220-224	231
224-235	141
235-242	176
242-248	106
248-251	1000+
251-254	1500+
254-259	756
259-265	631
265-272	539
272-277	755
277-285	947
285-289	947
289-298	425
298-305	542
305-309	947
309-315	1000+
315-317	2500+
317-321	1250+
321-324	1000+
324-329	1000+
329-333	569
333-338	457
338-345	542
345-352	542
352-359	542
359-364	757
364-369	757
369-375	1000+
375-378	1500+
378-382	1250+
382-398	947
398-400	1000+
Mile 432	
10 December 1958	
6- 13	51
13- 24	41
24- 27	154
27- 33	169
33- 41	94
41- 51	49
51- 63	42
63- 74	29
74- 82	49
82- 86	95
86- 92	21
92- 97	42
97-101	95
101-107	380
107-115	725
115-121	155
121-124	55
124-137	53
137-144	113
144-151	47
151-160	70
160-166	105
166-170	155
170-180	95
180-188	118
188-201	346
201-207	231
207-214	274
214-219	366
219-225	304
225-230	306
230-238	481
238-246	481
246-250	418
250-259	424
259-265	631
265-274	816
274-279	756
279-284	307
284-289	395
289-295	1000±
295-300	1000±
300-304	947
304-310	632
310-312	757
312-317	757
317-325	475
325-331	632
331-337	632
337-344	632
344-350	457
350-359	422
359-365	757
365-369	1500+
369-374	755
374-377	1250
377-378	5000
378-378	Inf.
Mile 438	
10 December 1958	
3- 5	34
5- 12	129
12- 18	379
18- 23	311
23- 30	199
30- 35	130
35- 41	124
41- 48	94

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
48- 58	41	320-325	397		
58- 62	140	325-327	532		
62- 65	95	327-330	1000+		
65- 79	60	330-333	1000+		
79- 84	223	333-338	517		
84- 91	263	338-344	407		
91- 98	263	344-349	757		
98-104	215	349-353	1000+		
104-109	78	353-355	2000+		
109-112	95				
112-116	567				
116-122	130				
122-124	155				
124-129	275				
129-142	135				
142-146	267				
146-151	395				
151-161	245				
161-176	175				
176-186	381				
186-195	424				
195-200	276				
200-206	256				
206-211	516				
211-212	2000±				
212-213	2000±				
213-214	5000±				
214-215	5000±				
215-216	1750±				
216-219	756				
219-222	406				
222-227	246				
227-232	156				
232-238	506				
238-244	424				
244-249	756				
249-256	264				
256-259	606				
259-264	456				
264-278	220				
278-286	477				
286-296	382				
296-303	542				
303-309	632				
309-313	345				
313-320	307				


RAM HARDNESS
1000 800
TEMPERATURE, °C 600 400 200
-30 -20 -10
0 STRATIGRAPHIC
0 PROFILE. 2
DENSITY
0.4 0.6 0.8
STATION Mile 444
Elevation - 1799 m
DATE 11 Dec., 1958 TIME Z
LOCATION 84° 23.0'S
111° 03'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
SAS
SAS
SAS
1250
5000
5000
TEMP. AT 10M.
-30.3°C.

IGY Byrd Traverse 1958-59

Station Mile 444

Date 11 December 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 5	M	<.5	
5- 6	S	.5 and less	
6- 14	H	.5 and less	
14- 15	S	.5-1.0	
15- 20	H	<.5	
20- 24	H	.5-1.0	
24- 26	H	.5 & <	
26- 28	M	.5-1.0	
28- 35	M	<1.0	Softer than layer above
35- 42	S	.5-1.5	Little drip grains
42- 49	M	<1.0	
49- 55	M	<.5	Harder than layer above
55- 59	S	.5-1.0	
59- 64	H	.5-1.0	Small drip grains
64- 67	M	.5-1.5	Drip grains
67- 76	H	.5-1.0	
76- 89	VH	.5-1.0	
76			Thin crust
89- 91	S	2.0-6.0	Many drip grains
91-100	S	1.0-2.0	Harder than layer above
100-111	H	1.0-1.5	
101			Sastrugi surface
111-114	H	1.0	Softer than 100-111
114-120	VH	.5-1.0	
120-125	H	1.0-1.5	
125-127	H	1.0-2.0	Drip grains, softer than layer above and below
127-132	H	.5-1.0	
132-142	H	.5-1.0	
142			Granular crust
142-149	VH	1.0-1.5	
149-150	H	1.0-2.0	
150-153	VH	.5-1.5	
153-159	VH	.5-1.0	Softer than layer above
159-161	S	1.0-2.5	Drip grains
161			Granular crust
161-168	M	1.0-2.0	
168-170	M	1.0-1.5	Harder than 161-168
170-174	H	.5-1.0	
174			Crust
174-177	M	1.0-2.0	Drip grains
177-184	H	1.0-2.0	Drip grains

Depth cm	Hard-ness	Grain Size, mm	Remarks
184-199	H	.5-1.5	
199-209	VH	1.0-1.5	
209-220	VH	1.0-1.5	Softer than layer above
220-228	VH	.5-1.0	Extra hard
228			Very thin sastrugi crust
228-246	H	1.0-2.0	Few drip grains
246-255	VH	.5-1.0	
255			Crust
255-258	VH	1.0-1.5	Softer than layer above
258-262	M	1.0-3.0	Drip grains
262-265	M	1.0-2.0	
265-269	VH	1.0-2.0	
269-278	M	1.0-3.0	Drip grains
278-281	H	1.0-1.5	
281			Thin crust
281-290	M	1.0-2.0	
290-302	VH	.5-1.0	Little drip grains
302-310	M	1.0-2.0	
310-315	VH	.5-1.5	

IGY Byrd Traverse 1958-59

Station Mile 444

Date 11 December 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
				Bad lighting, stratigraphy hard to see, storm
310-320	.472	D	S	
320-330	.487	D	S	
330-338	.512	D	S	No. 2 crust at 7.5 cm
338-347	.510	D	S	
347-352	.476	M	S	
352-357	.492	M	S	No. 2 crust at 4.5 cm
357-367	.519	D	S	
367-377	.514	D	S	No. 1 crust at 8.4 to 9.0 cm; sastrugi surface
377-386	.505	D	S	
386-395	.508	D	S	No. 1 crust at 8.0 cm
395-404	.510	D	S	
404-414	.499	D	S	No. 1 crust at 8.8 to 9.5
414-417	.490	M	S	
417-423	.527	D	S	
423-427	.507	M	S	
427-430	.491	M	S	
430-440	.507	D	S	
440-449	.536	D	S	
449-456	.549	D	S	
456-466	.521	D	S	
466-476	.536	D	S	No. 3 crust at 0.5 cm
476-483	.526	D	S	No. 2 crust at 0.5 cm; No. 2 crust at 1.0 cm; No. 3 crust at 5.5 cm
483-490	.524	M	S	Break at 3.0 cm
490-499	.527			0-3.7 cm M packing S grain; 3.7 to end D and S; No. 2 crust at 3.7
499-504	.558	D	S	
504-512	.542	D	S	
512-517	.505	D	S	
517-525	.524	D	S	
525-535	.536	D	S	
535-544	.471	D	S	
544-554	.511	D	S	
554-557	.509	M	S	
557-562	.514	D	S	No. 1 crust at 4.9 cm to end
562-572	.534	D	S	
572-582	.544	D	S	
582-590	.548	D	S	No. 1 crust at 1.1 to 2.7, sastrugi surface
590-599	.550	D	S	No. 1 crust at 7.8 cm to end, sastrugi surface
599-604	.567	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
604-608	.568	D	S	No. 2 crust at 3.4 cm to bottom
608-612	.568	D	S	
612-621	.550	D	S	
621-631	.552	D	S	
631-641	.545	D	S	No. 1 crust at 4.6 cm; break at 4.8 cm
641-650	.536	M	S	No. 1 crust at 2.1 to 2.9 cm
650-660	.529	D	S	
660-665	.563	D	S	0-1.5 cm M packing and S grain
665-669	.571	D	S	No. 1 crust at 0.8 cm; No. 1 crust at 3.5 cm
669-679	.523	M	S	Break at 2.0 cm
679-692	.548	D	S	No. 1 crust at 0.0 to 0.6 cm
692-700	.512	D	S	
700-710	.559	D	S	
710-718	.542	D	S	
718-723	.572	D	S	No. 1 crust at 4.1 to end
723-733	.566	D	S	No. 1 crust at 9.0 cm
733-741	.562	D	S	
741-746	.580	D	S	
746-755	.563	D	S	
755-765	.550	D	S	No. 1 crust at 1.6 to 2.5 cm; sastrugi surface
765-775	.557	D	S	
775-785	.562	D	S	
785-793	.545	D	S	
793-803	.542	M	S	
803-813	.575	D	S	
813-823	.571	D	S	
823-831	.572	D	S	
831-838	.560	D	S	No. 1 crust at 5.5 cm
838-841	.568	M	S	
841-850	.565	D	S	No. 1 crust at 7.6 to 9.0 cm
850-860	.559	M	S	
860-871	.555	M	S	
871-881	.572	D	S	
881-886	.584	D	S	
886-896	.586	D	S	No. 2 crust at 1.7 cm
896-910	.580	D	S	No. 2 crust at 13.6 cm
910-913	.603	D	S	No. 1 crust at 0.5 to 1.0 cm
913-923	.579	D	S	
923-928	.577	D	S	
928-934	.587	D	S	
934-943	.582	D	S	
943-949	.599	D	S	No. 1 crust at 4.5 to 5.4 cm
949-959	.567	D	S	
959-969	.582	D	S	
969-976	.582	D	S	No. 1 crust at 6.5 cm to bottom

Depth cm	Density	Packing	Grain Size	Remarks
976- 984	.576	D	S	Double No. 1 crust at 2.0 cm
984- 995	.562	D	S	
995-1007	.587	D	S	
1007-1014	.595	D	S	No. 1 crust at 5.6 to 6.0 cm; sastrugi surface
1014-1024	.588	D	S	
1024-1031	.578	M	S	No. 1 crust at 3.0 cm
1031-1040	.587	M	S	No. 2 crust at 0.1 cm; double No. 1 crust at 7.2 to 8.2 cm
1040-1048	.584	D	S	No. 2 crust at 7.0 cm to bottom
1048-1060	.579	D	S	No. 1 crust at 11.0 cm to bottom
1060-1066	.598	D	S	
1066-1074	.583	D	S	No. 2 crust at 2.4 to 3.1 cm
1074-1082	.591	D	S	Break at 2.5 cm; No. 1 crust at 3.6 cm
1082-1090	.590	D	S	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 450	
12 December 1958	
10- 17	51
17- 22	244
22- 25	304
25- 31	244
31- 34	244
34- 38	184
38- 43	130
43- 47	116
47- 52	59
52- 59	56
59- 63	94
63- 69	64
69- 73	116
73- 75	95
75- 82	45
82- 88	155
88- 94	65
94-101	70
101-109	50
109-118	55
118-122	95
122-128	230
128-132	567
132-138	380
138-147	185
147-151	140
151-158	57
158-168	60
168-175	30
175-183	362
183-186	206
186-192	231
192-197	756
197-204	541
204-207	1000+
207-209	5000+
209-211	5000+
211-213	1250
213-216	856
216-219	606
219-228	424
228-233	454
233-238	756
238-243	456
243-250	220
250-257	541
257-262	306
262-266	231
266-272	631
272-278	631
278-289	295
289-297	176
297-305	232
305-309	232
309-314	367
314-319	637
319-326	499
326-331	337
331-334	657
334-338	947
338-340	1250±
340-343	1500±
343-344	5000±
344-345	5000±
Mile 456	
12 December 1958	
2- 6	116
6- 13	222
13- 18	148
18- 24	79
24- 31	44
31- 38	82
38- 44	79
44- 47	154
47- 53	229
53- 56	184
56- 60	139
60- 67	184
67- 70	124
70- 74	140
74- 80	65
80- 83	125
83- 90	325
90- 93	405
93- 96	105
96-107	33
107-111	117
111-113	155
113-124	680
124-133	405
133-138	1000+
138-143	425
143-150	433
150-158	473
158-161	455
161-168	155
168-173	215
173-176	405
176-184	566
184-188	756
188-192	456
192-197	126
197-202	186
202-209	198
209-220	116
220-226	206
226-232	156
232-238	156
238-246	286
246-251	426
251-257	506
257-264	541
264-269	1250+
269-271	1500+
271-278	945
278-281	506
281-287	307
287-293	382
293-298	607
298-301	357
301-304	357
304-307	1250
307-310	982
310-313	407
313-321	362
321-326	757
326-330	947
330-335	1250
335-337	2000
337-343	1000+
343-352	682
352-362	757
362-371	852
371-376	607
376-377	2000-
377-382	1250
382-386	2000+
386-387	5000+

RAM HARDNESS DATA SHEET

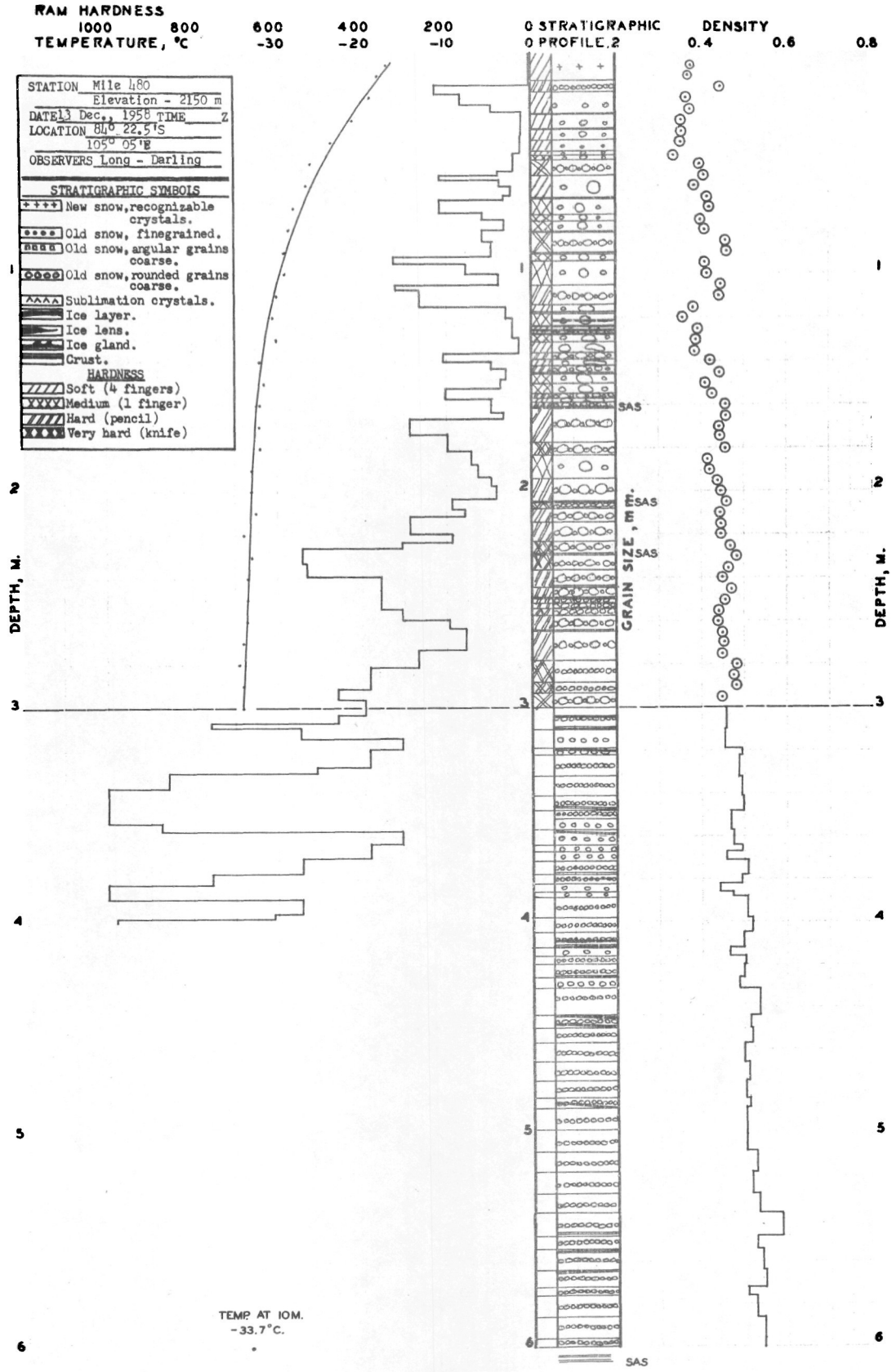
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 462	
12 December 1958	
15- 29	175
29- 36	17
36- 43	8
43- 46	44
46- 57	84
57- 62	82
62- 65	64
65- 71	349
71- 75	116
75- 82	82
82- 87	203
87- 91	207
91- 96	455
96- 98	455
98-113	255
113-125	267
125-135	80
135-142	93
142-150	43
150-166	567
166-171	755
171-178	855
178-182	418
182-185	256
185-193	946
193-199	1000
199-206	541
206-211	306
211-220	206
220-225	216
225-233	156
233-238	216
238-245	176
245-252	118
252-259	135
259-262	256
262-266	381
266-270	456
270-272	381
272-285	231
285-292	1000
292-298	406
298-306	345
306-314	287
314-322	307
322-324	607
324-328	1250
328-330	2000
330-330	Inf.
330-331	5000+
Mile 468	
12 December 1958	
3- 12	7
12- 19	38
19- 27	34
27- 32	52
32- 37	34
37- 45	41
45- 50	64
50- 56	64
56- 60	184
60- 66	214
66- 71	148
71- 75	163
75- 83	264
83- 87	275
87- 96	205
96-100	193
100-109	154
109-116	93
116-120	117
120-132	30
132-139	70
139-146	175
146-150	117
150-162	117
162-166	230
166-172	130
172-174	306
174-182	81
182-186	156
186-198	318
198-203	306
203-215	306
215-223	474
223-227	568
227-234	348
234-240	631
240-243	1500
243-244	2500
244-245	2000
245-247	1000
247-251	946
251-255	531
255-260	336
260-270	231
270-278	464
278-286	381
286-292	325
292-298	507
298-305	457
305-314	425
314-318	457
318-325	435
325-330	607
330-333	2000
333-338	2000
338-343	699
343-350	262
350-357	519
357-360	507
360-364	569
364-368	532
368-372	947
372-374	1000
374-379	980
379-383	947
383-387	1250
387-390	1250
390-394	419
394-398	457
398-400	531
Mile 474	
12 December 1958	
12- 17	154
17- 25	286
25- 31	350
31- 39	173
39- 45	139
45- 52	69
52- 56	72
56- 63	106
63- 66	64
66- 78	79
78- 83	78
83- 87	164
87- 94	57

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
94- 97	125				
97-105	230				
105-109	140				
109-116	83				
116-120	343				
120-128	567				
128-133	455				
133-137	305				
137-145	80				
145-153	135				
153-157	117				
157-163	30				
163-169	630				
169-171	755				
171-179	286				
179-187	231				
187-197	306				
197-201	343				
201-207	156				
207-211	231				
211-215	306				
215-222	198				
222-226	381				
226-235	106				
235-240	126				
240-242	531				
242-246	344				
246-252	256				
252-260	466				
260-263	356				
263-267	306				
267-276	338				
276-283	242				
283-288	577				
288-290	1250				
290-292	1250				
292-295	1000				
295-299	1000				
299-301	1000				
301-310	1000				
310-316	532				
316-320	682				
320-324	947				
324-336	980				
336-338	2500				
338-339	2500				


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC 0 PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION Mile 480
Elevation - 2150 m
DATE 13 Dec., 1958 TIME Z
LOCATION 84° 22.5'S
105° 05'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
SAS
SAS
SAS
SAS
TEMP AT 10M.
-33.7°C.

IGY Byrd Traverse 1958-59

Station Mile 480

Date 13 December 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 12	S	< .5	New snow, round grains
12- 17	H	<1.0	
17- 27	S	<1.0	
27- 34	S	.5-1.0	Little drip grains
34			Crust
34- 39	S	.5-1.0	Harder than layer above
39- 44	S	<1.0	Small drip grains
44- 46	S	.5-1.0	
46- 48	M	.5-1.0	Small drip grains
48- 55	VH	1.0-2.0	Drip grains
55- 65	S	1.0-2.5	Drip grains
65			Granular crust
65- 73	M	1.0-2.0	
73- 76	M	1.0-2.0	
76- 81	M	1.0-2.0	Drip grains
81			Granular crust
81- 91	VH	1.0-1.5	
91			Crust
91- 94	M	1.0-2.0	Small drip grains
94-105	M	1.0-2.0	Softer than layer above
105-114	H	.5-1.5	
114-117	S	1.0-3.0	Drip grains
117-118	S	2.0-4.0	Drip grains, softer than above layer
118-124	M	1.0-2.0	Drip grains
122			Crust
124			Crust
124-125	S	1.0-3.0	Drip grains
125-127	H	1.0-2.0	Drip grains; granular crust area
127-131	M	1.0-3.0	Drip grains
131-136	S	2.0-5.0	Drip grains
136-139	H	1.0-2.0	
139-142	S	1.0-5.0	Drip grains
142-145	H	1.0-2.0	Drip grains
145			Granular crust
145-150	S	1.0-3.0	Drip grains
150-155	M	1.0-3.0	Drip grains
155-157	H	1.0-2.0	Drip grains
157-159	S	2.0-4.0	Drip grains (on angle)
159-161	H	1.0-2.0	
161			Sastrugi crust
161-177	H	1.0-2.0	
177-183	VH	.5-1.5	

Depth cm	Hard-ness	Grain Size, mm	Remarks
183-194	M	1.0-2.0	
194-205	H	1.0-3.0	Drip grains
205			Sastrugi crust
205-208	VH	1.0	
208-214	H	1.0-2.0	Drip grains
214-223	H	1.0-3.0	Drip grains, softer than layer above
223-229	VH	1.0-2.0	
229			Sastrugi surface
229-236	VH	.5-1.0	Harder than layer above
236-244	H	.5-1.5	
244			Thin crust
244-249	H	1.0-2.0	Drip grains, softer than layer above
249			Sastrugi surface
249-251	VH	.5-1.5	
251-254	H	1.0-2.0	Drip grains
254-257	VH	1.0-1.5	
257-264	H	1.0-2.0	
264			Thin crust
264-278	H	1.0-3.0	Drip grains
278-288	VH	1.0	
288-293	VH	.5-1.0	Harder than layer above and below
293-300	VH	1.0-2.0	

IGY Byrd Traverse 1958-59

Station Mile 480

Date 13 December 1958

Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
300-310	.468	D	S	No. 1 crust at 4.7 cm and 8.8 cm
310-319	.465	M	S	
319-322	.491	M	S	No. 2 crust at 0.0 to 1.1 cm
322-332	.488	D	S	
332-341	.495	D	S	
341-348	.498	D	S	No. 1 crust at 6.0 to 6.4 cm; break at 6.0 cm
348-357	.467			0-4 cm packing D and grain size S; 4-9.3 cm packing M and grain size S
357-364	.476	M	S	No. 2 crust at 0.0 to 1.0 cm
364-367	.494	M	S	
367-371	.457	M	S	
371-378	.509	D	S	No. 2 crust at end
378-382	.495	D	S	
382-386	.440	L	S	
386-388	.473	L	S	
388-398	.507	D	S	
398-405	.519	D	S	
405-412	.499	D	S	No. 3 crust at 4.0 and 5.5 cm
412-416	.465	L	S	
416-420	.502	D	S	
420-426	.498	D	S	No. 2 crust at end
426-431	.487	M	S	Break at 4.0 cm
431-444	.534	D	S	
444-450	.512	D	S	No. 1 crust at 0.7 to 1.7 cm; No. 3 crust at 6.0 cm
450-457	.514	D	S	
457-466	.498	D	S	
466-475	.508	D	S	
475-483	.501	D	S	
483-487	.511	D	S	No. 1 crust at 1.5 cm to end
487-498	.502	D	S	Break at 3.3 cm
498-508	.502	D	S	
508-518	.526	D	S	
518-528	.515	D	S	
528-537	.530	D	S	
537-548	.585	D	S	No. 3 crust at 10.0 cm
548-554	.527	D	S	
554-564	.537	D	S	No. 2 crust at 0.5 cm
564-572	.545	D	S	No. 2 crust at 0.5 cm
572-576	.502	D	S	
576-586	.526	D	S	
586-596	.541	D	S	
596-605	.542	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
605-615	.548	D	S	No. 1 crust at 6.0 to 7.3 cm; sastrugi crust at 3.9 to 5.2 cm
615-625	.543	D	S	
625-635	.541	D	S	No. 1 crust at 6.7 to 7.5 cm; No. 3 crust at 1.0 and 6.5 cm
635-641	.542	D	S	Double No. 1 crust at 4.4 to 5.1 cm
641-650	.532	D	S	
650-660	.522	D	S	
660-668	.548	D	S	No. 1 crust at 5.5 to 7.3 cm
668-678	.554	D	S	
678-690	.538	D	S	
690-700	.538	D	S	
700-706	.538	D	S	No. 2 crust at end
706-716	.533	D	S	
716-726	.552	D	S	
726-736	.555	D	S	
736-745	.548	D	S	No. 3 sastrugi crust at 0.3 to 2.5 cm; No. 3 crust at 7.3 cm
745-753	.533	M	S	
753-759	.565	D	S	
759-767	.559	D	S	No. 1 crust at 6.5 cm
767-777	.567	D	S	
777-783	.573	D	S	Double No. 1 crust at 5.3 cm
783-793	.552	D	S	No. 1 crust at 1.4 cm
793-799	.559	M	S	
799-808	.565	D	S	No. 1 crust at 0.5 cm
808-819	.555	D	S	No. 1 crust at 9.6 to 10.5 cm
819-822	.554	M	S	
822-832	.572	D	S	
832-842	.567	D	S	
842-852	.574	D	S	No. 3 sastrugi crust at 7.8 cm to end
852-858	.576	D	S	No. 3 crust at 1.2 cm; No. 2 crust at 6.1 cm
858-868	.555	D	S	
868-878	.575	D	S	No. 3 crust at 3.0 cm
878-888	.575	D	S	
888-898	.578	D	S	No. 2 crust at 0.5 cm
898-908	.568	D	S	No. 3 crust at 6.5 cm
908-916	.553	M	S	Double No. 1 crust at 8.0 cm
916-926	.554	D	S	
926-931	.565	M	S	
931-937	.574	D	S	Double No. 1 crust at 0.5 cm
937-941	.558	M	S	
941-951	.560	D	S	
951-960	.566	D	S	Sastrugi crust at 0.8 cm to 2.4 cm

Depth cm	Density	Packing	Grain Size	Remarks
960- 974	.567	D	S	Break at 9.0 cm
974- 984	.571	D	S	No. 1 crust at 0.8 to 1.6 cm
984- 993	.576	D	S	No. 2 crust at end
993-1003	.567	D	S	No. 3 crust at 5.0 cm
1003-1010	.592	D	S	No. 1 crust at end
1010-1015	.582	D	S	
1015-1025	.574	D	S	No. 3 sastrugi crust at 7.0 to 8.0 cm; No. 3 crust at 1.6 and 2.6 cm
1025-1035	.573	D	M	
1035-1040	.596	D	M	
1040-1044	.583	D	S	
1044-1048	.603	M	S	
1048-1059	.586	D	S	No. 3 crust at 10.5 cm
1059-1069	.578	D	M	
1069-1079	.579	D	S	

RAM HARDNESS DATA SHEET

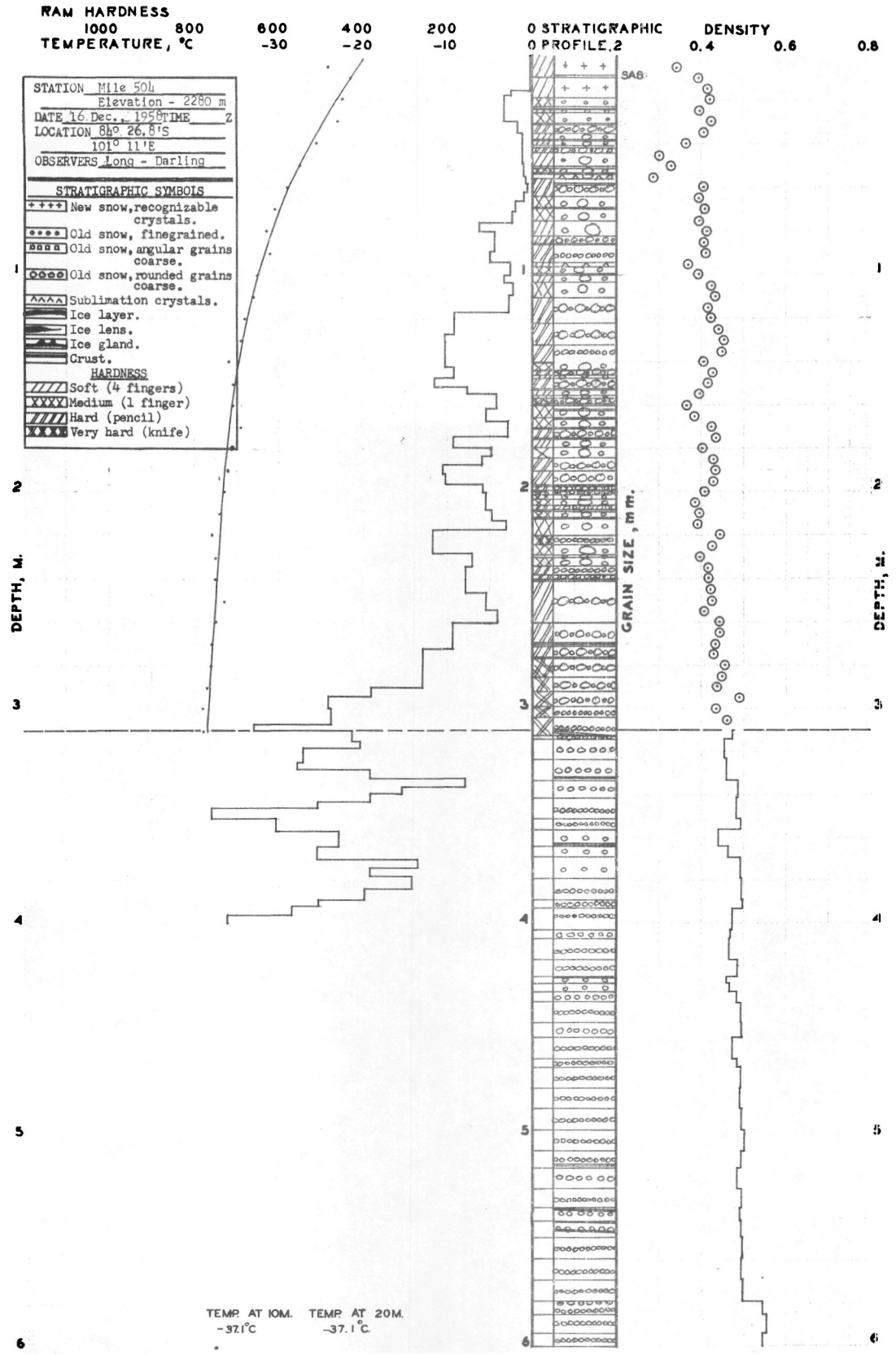
Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 486	
14 December 1958	
1- 8	38
8- 14	34
14- 23	27
23- 28	44
28- 35	34
35- 39	49
39- 50	30
50- 56	39
56- 62	28
62- 65	44
65- 69	154
69- 76	85
76- 79	54
79- 87	57
87- 92	65
92- 99	90
99-104	150
104-106	410
106-110	567
110-118	567
118-121	155
121-128	95
128-132	185
132-137	60
137-140	305
140-145	1000+
145-153	945
153-162	655
162-165	405
165-171	130
171-177	130
177-182	96
182-187	126
187-194	176
194-202	118
202-207	306
207-209	606
209-212	846
212-215	506
215-218	256
218-226	231
226-234	324
234-238	306
238-244	456
244-248	606
248-252	681
252-255	656
255-259	418
259-267	248
267-270	256
270-274	156
274-277	507
277-280	457
280-287	435
287-292	427
292-298	182
298-304	332
304-307	357
307-311	345
311-316	517
316-323	285
323-326	357
326-329	407
329-335	457
335-340	457
340-344	647
344-348	1000+
348-353	1000+
353-355	1000+
355-361	1000+
361-365	1000+
365-368	807
368-374	582
374-379	667
379-385	382
385-390	427
390-396	382
396-400	757
Mile 492	
14 December 1958	
3- 12	7
12- 19	29
19- 25	28
25- 33	19
33- 37	49
37- 48	30
48- 54	44
54- 61	34
61- 63	109
63- 66	154
66- 70	116
70- 75	77
75- 81	50
81- 88	95
88- 94	50
94-101	70
101-106	42
106-110	95
110-115	185
115-119	140
119-124	114
124-129	167
129-139	78
139-144	150
144-147	155
147-154	63
154-162	63
162-166	117
166-169	245
169-175	305
175-180	456
180-186	481
186-190	193
190-197	176
197-207	96
207-211	156
211-217	106
217-220	206
220-223	206
223-232	138
232-240	399
240-247	306
247-251	194
251-258	220
258-267	206
267-274	606
274-285	1500
285-288	507
288-294	632
294-301	542
301-305	457
305-310	487
310-316	357
316-321	757
321-323	457
323-327	532
327-333	282
333-336	407

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
336-341	667
341-345	532
345-349	569
349-352	607
352-355	607
355-361	507
361-365	645
365-367	682
367-372	757
372-376	947
376-381	1000
381-382	2000
382-387	757
387-392	397
392-397	487
397-399	607
399-400	980
Mile 498	
14 December 1958	
3- 10	30
10- 20	34
20- 26	9
26- 34	19
34- 38	11
38- 42	11
42- 47	22
47- 55	33
55- 58	34
58- 62	191
62- 66	191
66- 71	202
71- 75	94
75- 80	94
80- 88	130
88- 91	95
91- 98	57
98-104	50
104-113	65
113-121	106
121-125	117
125-131	95
131-137	80
137-148	80
148-156	63
156-162	35
162-167	42
167-176	105
176-180	276
180-186	111
186-190	254
190-195	456
195-199	209
199-204	276
204-206	276
206-211	96
211-222	88
222-226	165
226-232	186
232-239	272
239-243	231
243-252	278
252-256	118
256-260	194
260-267	241
267-275	906
275-278	307
278-287	274
287-295	382
295-301	432
301-305	269
305-308	357
308-313	337
313-318	337
318-324	507
324-328	495
328-330	382
330-333	607
333-337	382
337-342	367
342-349	562
349-354	397
354-365	597
365-370	457
370-376	507
376-384	682
384-385	907
385-390	337
390-392	832
392-397	757
397-399	1250
399-400	1000+


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC 0 PROFILE 2
DENSITY
0.4 0.6 0.8
STATION Mile 504
Elevation - 2280 m
DATE 16 Dec., 1958 TIME Z
LOCATION 8h° 26.8'S
101° 11'E
OBSERVERS Long - Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS
DEPTH, M.
GRAIN SIZE, mm.
TEMP. AT 10M. -37.1°C
TEMP. AT 20M. -37.1°C.

IGY Byrd Traverse 1958-59

Station Mile 504

Date 15 December 1958

Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 10	S	<.5	New snow, round grain
10			Sastrugi surface
10- 19	S	<.5	New snow, round grain; wind bedding
19- 23	M	<.5	
23- 24	S	.5-1.0	
24			Granular crust
24- 26	S	.5	
26- 31	S	.5	Harder than 24-26
31			Thin granular crust
31- 35	H	.5-1.0	
35- 38	S	.5-1.0	Uneven layer, variable thickness
38			Crust
38- 41	S	.5-1.0	Harder than 35-38
41- 42	S	.5-1.0	Like 35-38
42- 44	H	.5-1.0	
44- 50	S	.5-2.0	Drip grains
50- 51	S	1.0-2.0	Drip grains, very soft layer
51- 53	M	1.0-2.0	Drip grains
53			Thin crust
53- 56	S	1.0-3.0	Sublimation crystals, drip grains
56- 64	H	1.0-2.0	
59			Thin crust
64- 69	M	1.0-2.0	Drip grains
69			Icy crust
69- 75	M	1.0-2.0	Softer than layer above
75- 82	S	1.0-3.0	
82- 85	H	.5-1.0	
85			Crust
85- 94	H	1.0	Softer than 82-85
94- 96	S	2.0-6.0	Sublimation crystals, drip grains, loose
96- 99	M	1.0-2.0	
99			Crust
99-103	S	1.0-3.0	Drip grains
103-110	M	1.0-2.0	Drip grains
110-122	H	1.0-2.0	Few drip grains
122-132	H	1.0-1.5	Harder than layer above
132-140	H	1.0	
140-143	M	1.0-2.0	
143-146	H	.5-1.5	
146-147	M	1.0-1.5	
147-152	H	1.0-1.5	
152			Thin crust
152-155	S	1.0-1.5	

Depth cm	Hardness	Grain Size, mm	Remarks
155-156	S	1.0-2.0	Drip grains, softer than layer above, loose
156-159	VH	.5-1.0	
159-160	S	1.0-3.0	Drip grains
160-165	M	1.0-2.0	
162			Thin crust
165			Thin crust
165-170	M	1.0-2.0	Few drip grains
170-175	H	1.0-1.5	
170			Sastrugi surface
175-179	S	1.0-2.0	Few drip grains
175			Thin crust
179-184	M	1.0-2.0	Small drip grains
184-190	H	1.0-1.5	
190-197	H	1.0-1.5	
197			Thin crust
197-199	H	1.0	Harder than 190-197
199-201	VH	1.0-1.5	
201-203	S	1.0-2.0	Drip grains
203-206	M	1.0-2.0	Few drip grains
206-208	H	1.0-1.5	
208-209	S	1.0-2.5	Drip grains
209-211	M	1.0-1.5	
211			Very thin crust
211-220	M	1.0-2.0	Drip grains, softer than layer above
220-224	VH	1.0	
224-229	M	1.0-1.5	
229-230	M	1.0-2.0	Drip grains, softer than 224-229
230-234	M	1.0-1.5	Similar to 224-229
234-238	H	1.0	
238-240	H	1.0	Harder than layer above
240			Very thin crust
240-260	H	1.0-2.0	Nearly the same as 234-238
260-270	H	.5-1.0	Same as 238-240
270			Thin crust
270-271	M	1.0-2.0	Drip grains
271-276	H	1.0-2.0	
276			Very thin crust
276-285	VH	1.0-1.5	
285-292	VH	1.0-2.0	
292-299	VH	.5-1.0	Harder than 276-292
299-304	VH	1.0	
304-312	VH	1.0	Like 292-299

IGY Byrd Traverse 1958-59

Station Mile 504 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
643-649	.522	D	S	
649-654	.518	M	S	
654-664	.540	D	S	
664-668	.543	D	S	No. 1 crust at 3.7 and 4.5 cm
668-678	.524	D	S	
678-688	.524	D	S	
688-700	.543	D	S	
700-710	.532	D	S	
710-717	.540	D	S	No. 1 crust at 5.5 and 6.5 cm
717-727	.544	D	S	
727-733	.543	M	S	No. 3 crust at end
733-742	.525	M	S	
742-752	.526	M	S	
752-755	.537	M	S	No. 1 crust at 0.8 to 1.2 cm
755-759	.523	D	S	
759-763	.521	M	S	
763-773	.533	D	S	
773-783	.553	D	S	
783-793	.544	D	S	
793-797	.542	D	S	No. 1 crust at 2.0 and 3.7 cm
797-807	.542	D	S	
807-817	.543	D	S	
817-827	.530	D	S	
827-836	.544	M	S	
836-843	.555	D	S	
843-851	.557	D	S	No. 1 crust at 6.7 and 7.1 cm
851-861	.553	D	S	
861-866	.565	D	S	
866-875	.554	D	S	No. 2 crust at 8.0 cm
875-881	.544	D	S	
881-888	.546	D	S	
888-898	.551	D	S	
898-908	.551	D	S	
908-918	.555	D	S	
918-928	.547	D	S	
928-931	.556	M	S	
931-935	.588	D	S	
935-938	.561	M	S	No. 1 crust at 3.1 cm
938-948	.555	M	S	No. 2 crust at 8.0 cm
948-958	.549	D	S	
958-968	.551	D	S	
968-975	.571	D	S	
975-979	.573	D	S	
979-989	.540	D	S	No. 3 crust at 1.2 cm
989-999	.560	D	S	No. 2 crust at 3.7 cm

Depth cm	Density	Packing	Grain Size	Remarks
999-1009	.560	D	S	
1009-1018	.565	D	S	
1018-1023	.558	D	S	Break at 4.0 cm
1023-1030	.549	D	S	No. 1 crust at 1.1 to 1.5 cm
1030-1032	.528	M	S	
1032-1042	.553	D	S	
1042-1052	.568	D	S	
1052-1057	.568	D	S	No. 1 crust at 3.0 cm
1057-1067	.555	D	S	
1067-1076	.550	M	S	
1076-1083	.570	D	S	
1083-1097	.566		S	
1097-1107	.540		S	
1107-1110	.575		S	
1110-1121	.563		S	No. 1 crust at 10 cm
1121-1127	.562		S	
1127-1137	.551		S	No. 2 crust at 1 cm
1137-1146	.574		S	No. 2 crust at 1.3 cm
1146-1156	.579		S	
1156-1166	.585		S	No. 3 crust at 2.5 cm
1166-1171	.557		S	
1171-1173	.574		S	No. 2 crust at 1.5 cm
1173-1179	.569		S	
1179-1189	.559		S	
1189-1199	.576		S	
1199-1210	.568		S	
1210-1220	.568		S	
1220-1230	.609		S	No. 1 crust at 3.7 cm
1230-1243	.575		S	
1243-1252	.575		S	No. 2 crust at 7.5 cm
1252-1262	.574			No. 2 crust at 1 cm
1262-1271	.584			No. 1 crust at 5 cm
1271-1275	.565		S	
1275-1285	.574		S	
1285-1295	.585		S	No. 3 crust at 7.3 cm
1295-1305	.583		L	No. 2 crust at 2.4 cm
1305-1315	.590		S	
1315-1324	.598		S	
1324-1333	.580		S	No. 1 crust at 2.5 cm
1333-1343	.576		S	
1343-1353	.585		S	
1353-1359	.588		S	
1359-1369	.592		S	No. 2 crust at 5.5 and 8.5 cm
1369-1379	.588		S	
1379-1389	.592		S	No. 3 crust at 2.5 cm

Depth cm	Density	Packing	Grain Size	Remarks
1389-1400	.582		S	
1400-1410	.585		S	
1410-1420	.583		S	No. 2 crust at 6 cm
1420-1430	.593		S	
1430-1440	.593		S	
1440-1447	.592		S	No. 2 crust at 2 cm
1447-1457	.593		S	No. 2 crust at 1 cm; No. 1 crust at 3 cm
1457-1465	.596		S	
1465-1474	.582		S	No. 2 crust at 1.5 cm and 2 cm
1474-1483	.603		S	
1483-1493	.609		S	No. 1 crust at 1.5 cm
1493-1503	.606		S	
1503-1513	.607		S	No. 1 crust at 3.2 cm
1513-1516	.601		S	No. 1 crust at 1 cm
1516-1523	.603		S	No. 1 crust at 5 cm
1523-1533	.602		S	
1533-1543	.600		S	
1543-1553	.593		S	
1553-1562	.604		S	No. 2 crust at 9.2 cm
1562-1573	.595		S	No. 3 crust at 5 cm
1573-1583	.597		S	
1583-1593	.602		S	No. 1 crust at 6.5 cm
1593-1599	.604		S	
1599-1608	.600		S	No. 3 crust at 4.5 cm
1608-1616	.612		S	No. 1 crust at 3 cm
1616-1626	.602		S	No. 2 crust at 1.5 cm
1626-1634	.615		S	No. 1 crust at 2.3 cm
1634-1644	.603		S	No. 1 crust at 1.8 cm
1644-1653	.596		S	No. 3 crust at 7 cm
1653-1664	.596		S	No. 3 crust at 7.5 cm
1664-1670	.600		S	
1670-1681	.600		S	
1681-1690	.603		S	No. 1 crust at 3.2 cm
1690-1700	.600		S	
1700-1712	.601		S	No. 1 crust at 7.5 cm; No. 3 crust at 10 cm
1712-1718	.595		S	No. 3 crust at 2.5 cm
1718-1728	.609		S	
1728-1738	.614		S	No. 2 crust at 8.5 cm
1738-1748	.605		S	No. 1 crust at 2.5 cm
1748-1752	.602		S	
1752-1762	.604		S	
1762-1772	.610		S	
1772-1782	.613		S	No. 1 crust at 3 cm
1782-1787	.618		S	
1787-1797	.619		S	

IGY Byrd Traverse 1958-59

Station Mile 504 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
1797-1808	.613		S	
1808-1818	.610		S	No. 2 crust at 5.5 cm
1818-1826	.615		S	
1826-1836	.609		S	
1836-1846	.611		S	No. 1 crust at 7.9 cm; No. 2 crust at 3 cm
1846-1856	.612		S	No. 3 crust at 6 cm
1856-1863	.617		S	
1863-1873	.609		S	
1873-1881	.609		L	No. 1 crust at 2.6 cm
1881-1890	.610		S	
1890-1903	.607		S	
1903-1912	.622		S	Double No. 1 crust at 5.6 cm
1912-1922	.623		S	
1922-1932	.620		S	
1932-1939	.628		S	
1939-1947	.618		S	No. 1 crust at 4 cm
1947-1959	.615		S	No. 3 crust at 4.5 cm

IGY Byrd Traverse 1958-59

Station Mile 504

Date 15 December 1958

Observers Long, Dowmani

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
310-314	.471	D	S	No. 1 crust at 2.7 cm to the end
314-323	.454	M	S	
323-333	.459	M	S	No. 2 crust at 9.2 cm
333-341	.486	M	S	
341-351	.484	D	S	
351-356	.492	D	S	
356-364	.440	L	S	No. 1 crust at 7.5 cm; break at 6.5 cm
364-369	.462	M	S	
369-379	.492	M	S	
379-389	.494	D	S	
389-393	.497	D	S	
393-403	.471	D	S	
403-407	.467	M	S	
407-417	.466	D	S	
417-425	.484	D	S	
425-428	.460	L	S	Double No. 1 crust at 0.7 cm
428-432	.468	L	M	
432-437	.483	M	S	
437-447	.496	D	S	
447-454	.497	M	S	
454-464	.476	D	S	
464-468	.483	D	S	
468-478	.495	D	S	
478-488	.491	D	S	
488-498	.496	D	S	
498-508	.503	D	S	
508-516	.495	D	S	No. 3 crust at 6.5 cm
516-526	.486	M	S	
526-535	.496	D	S	
535-541	.491	M	S	No. 3 crust at 1.3 cm
541-549	.494	M	S	No. 3 crust at 5.5 cm; No. 1 crust at 0.0 to 0.4 cm
549-559	.498	D	S	
559-579	.495	D	S	
579-585	.499	D	S	
585-594	.544			0-2 cm M packing and S grains; 2-5.8 cm D packing and S grains
594-602	.551	D	S	
602-607	.545	D	S	
607-617	.523	D	S	
617-627	.491	M	S	
627-637	.524	D	S	
637-643	.520	D	S	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling

Depth cm	Hardness Number, Kg
Mile 510	
17 December 1958	
0- 9	21
9- 15	24
15- 25	5
25- 30	154
30- 34	76
34- 38	64
38- 43	34
43- 49	14
49- 58	34
58- 65	42
65- 70	39
70- 79	38
79- 88	31
88- 93	47
93- 97	80
97-100	65
100-107	45
107-112	42
112-117	220
117-120	35
120-126	65
126-136	78
136-142	110
142-148	65
148-151	65
151-159	130
159-168	75
168-175	83
175-179	141
179-190	78
190-196	66
196-204	86
204-208	344
208-210	544
210-215	204
215-223	118
223-226	126
226-229	186
229-232	306
232-235	486
235-240	606
240-244	381
244-248	268
248-251	256
251-255	174
255-259	344
259-263	306
263-267	268
267-272	306
272-276	231
276-281	337
281-284	307
284-288	307
288-292	382
292-296	419
296-298	382
298-304	307
304-307	557
307-311	345
311-314	357
314-317	257
317-322	397
322-328	407
328-334	407
334-340	307
340-345	247
345-350	427
350-358	399
358-365	435
365-368	607
368-370	457
370-373	507
373-376	407
376-382	507
382-387	397
387-390	557
390-394	495
394-400	632
Mile 516	
17 December 1958	
1- 9	19
9- 15	28
15- 25	22
25- 31	28
31- 38	21
38- 47	17
47- 50	54
50- 55	34
55- 57	23
57- 60	34
60- 62	49
62- 68	19
68- 71	64
71- 78	25
78- 85	52
85- 93	62
93- 97	73
97-106	45
106-112	50
112-121	65
121-125	73
125-132	95
132-144	110
144-148	73
148-151	155
151-157	50
157-166	55
166-174	85
174-181	46
181-185	28
185-189	73
189-199	105
199-202	96
202-207	236
207-212	96
212-219	71
219-221	231
221-227	111
227-238	211
238-241	216
241-248	96
248-254	141
254-257	366
257-262	456
262-267	456
267-274	434
274-282	947
282-290	872
290-292	2000+
292-294	457
294-301	157
301-306	307
306-312	307
312-316	157
316-320	345
320-322	532
322-327	367
327-334	542

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Darling, Doumani

Depth cm	Hardness Number, Kg
334-336	382
336-341	247
341-345	269
345-349	232
349-354	307
354-359	277
359-364	337
364-366	682
366-372	407
372-375	307
375-380	517
380-384	307
384-386	382
386-390	269
390-400	350

Mile 522
17 December 1958

Depth cm	Hardness Number, Kg
3- 16	11
16- 20	34
20- 26	34
26- 32	24
32- 37	34
37- 40	24
40- 46	9
46- 52	19
52- 57	34
57- 65	30
65- 72	47
72- 76	64
76- 85	87
85- 88	245
88- 91	185
91- 94	107
94- 97	185
97-102	60
102-110	60
110-115	60
115-122	83
122-132	86
132-138	110
138-150	177
150-153	125
153-160	107
160-165	167
165-173	73
173-176	156
176-181	123
181-184	71
184-188	186
188-194	231
194-197	216
197-202	186
202-205	156
205-215	96
215-219	165
219-222	216
222-229	108
229-233	118
233-239	96
239-246	146
246-251	149
251-256	276
256-258	456
258-266	456
266-270	456
270-276	631
276-282	631
282-289	307
289-293	419
293-296	457
296-302	257
302-304	607
304-309	457
309-311	607
311-319	569
319-321	1000+
321-326	247
326-330	345
330-333	457
333-337	647
337-340	507
340-346	432
346-352	407
352-356	682
356-360	947
360-364	947
364-367	1000
367-372	757
372-377	757
377-378	757
378-381	457
381-396	1000+
396-400	797

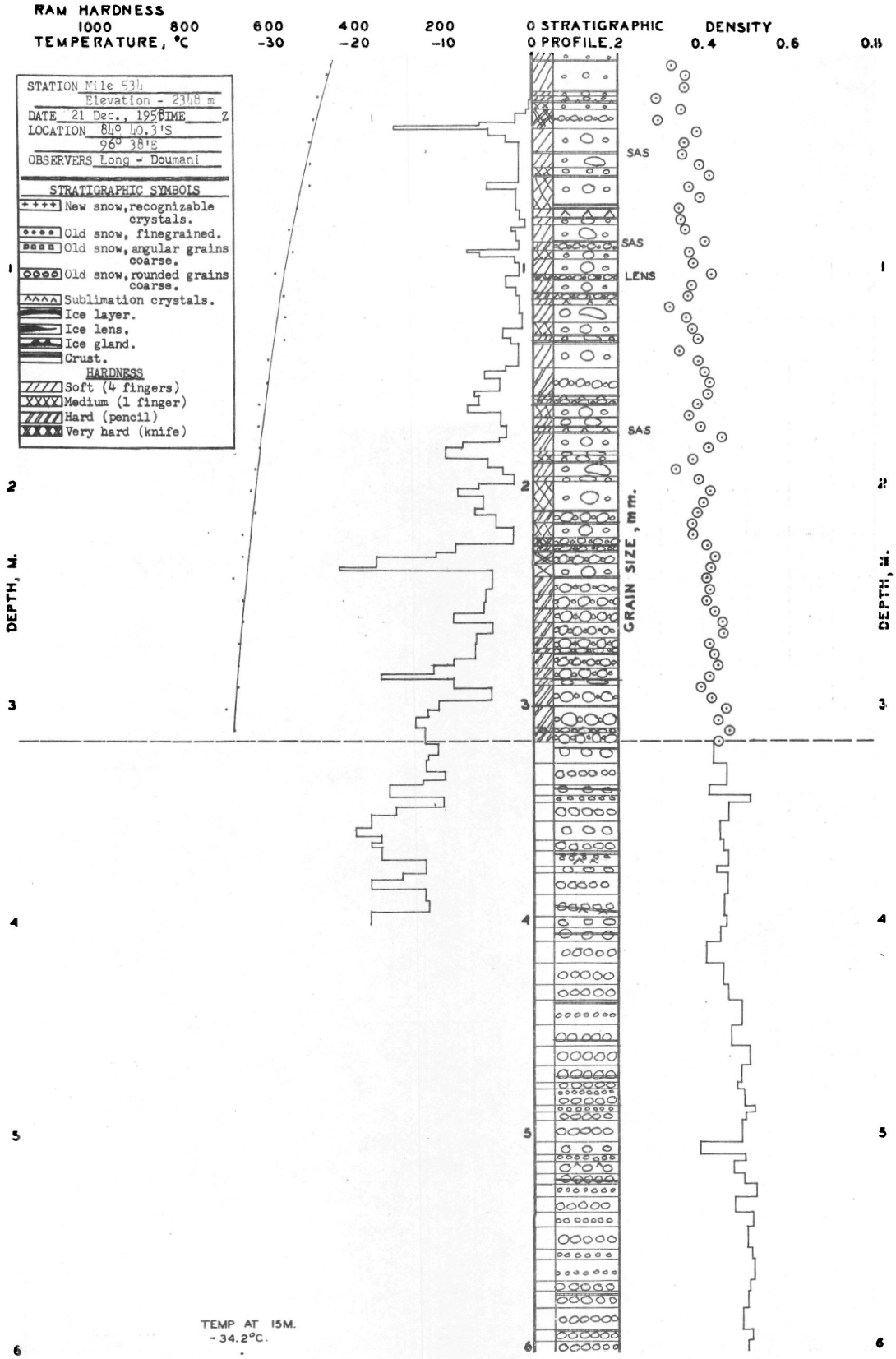
Mile 528
17 December 1958

Depth cm	Hardness Number, Kg
3- 17	10
17- 22	9
22- 28	19
28- 35	68
35- 45	79
45- 49	94
49- 52	64
52- 57	22
57- 64	17
64- 68	56
68- 72	56
72- 77	28
77- 81	12
81- 84	25
84- 91	43
91- 96	35
96-100	50
100-104	20
104-106	35
106-110	125
110-116	35
116-125	35
125-131	29
131-143	21
143-154	46
154-158	20
158-164	29
164-173	55
173-175	81
175-176	306
176-179	756
179-185	1000+
185-190	756
190-194	456
194-200	431
200-210	96
210-216	156
216-222	106
222-229	198
229-234	366
234-239	366
239-244	698
244-253	506
253-256	406
256-261	276

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
261-264	256				
264-270	256				
270-276	306				
276-278	382				
278-283	337				
283-289	282				
289-294	247				
294-298	345				
298-301	207				
301-307	232				
307-314	264				
314-316	532				
316-321	487				
321-325	307				
325-330	187				
330-335	277				
335-339	269				
339-345	507				
345-346	970				
346-359	297				
359-362	507				
362-368	282				
368-373	757				
373-378	367				
378-382	419				
382-385	307				
385-388	657				
388-400	345				


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC PROFILE 2
DENSITY
0.4 0.6 0.8
STATION Mile 534
Elevation - 2348 m
DATE 21 Dec., 1956 GMT Z
LOCATION 84° 40.3'S
96° 38'E
OBSERVERS Long - Doumani
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS
SAS
LENS
SAS
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 15M.
-34.2°C.

IGY Byrd Traverse 1958-59

Station Mile 534

Date 21 December 1958

Observers Long, Doumani

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 3	S	<.5	Very soft new snow
3			Granular crust
3- 17	S	.5-1.0	Harder than 0-3
17			Granular crust
17- 19	S	.5-1.5	Drip crystals; softer than 13-17
19			Granular crust
19- 21	S	.5-1.5	Harder than 17-19
21- 22	S	2.0-5.0	Sublimation crystals, cup and plates; loose
22- 25	M	<.5	
25			Granular crust
25- 34	VH	.5-1.0	
34- 45	S	1.0-2.0	Drip crystals
45			Granular crust; sastrugi surface
45- 51	S	1.0-1.5	Same as 34-45
51- 55	M	1.0±	
55			Granular crust
55- 70	M	1.0-2.0	Drip crystals, same hardness as 51-55
69- 70			Crusts with loose layer in between
70- 74	S	1.0-3.0	Large drips; sublimation crystals; loose
74- 77	S	1.0-3.0	Drip crystals
74			Granular crust
77- 85	S	1.0-3.0	Drip crystals
85			Sastrugi surface
85- 89	H	1.0-1.5	
89- 93	M	1.0-2.0	Drip crystals
93-100	S	1.0-3.0	Drip crystals
100-103	VH	.5-1.0	Lens
103-109	S	1.0-2.0	
109			Granular crust
109-111	H	1.0-2.0	
111-114	S	1.0-4.0	Plates
114			Icy crust
114-122	S	2.0-7.0	Large drip crystals; loose
122-128	M	1.0-2.0	Drip crystals
128			Granular crust
128-130	S	1.0-3.0	
130-132			Series of crusts with loose areas between
132-143	S	1.0-3.0	
143-156	H	1.0-2.0	Drip crystals
156			Granular crust
156-157		2.0-4.0	Sublimation crystals
157-159	H	1.0-2.0	
159-160	S	2.0-4.0	Drip crystals

Depth cm	Hardness	Grain Size, mm	Remarks
160-166	M	1.0-3.0	Drip crystals
166			Icy crust
166-170	S	2.0-4.0	Drip crystals; loose
170			Granular crust
170-172		2.0-5.0	Sublimation crystals, cups, plates, and drip crystals
172			Sastrugi surface
172-181	H	1.0-2.0	
181-183	S	2.0-5.0	Drip crystals; loose
183-186	M	1.0-3.0	
186			Granular crust
186-193	S	1.0-6.0	Drip crystals; loose
193-195	S	1.0-3.0	Harder than layer above
195-209	M	1.0-4.0	Drip crystals
209			Granular crust
209-214	H	1.0-3.0	
214			Granular crust
214-221	M	1.0-3.0	Drip crystals
221-225	VH	.5-1.5	
225			Granular crust
225-227	H	1.0-2.0	Drip crystals
227-228	S	2.0-5.0	Loose
228-233	VH	1.0-1.5	
233-239	M	1.0-3.0	Drip crystals
239			Two crusts
239-247	H	1.0-3.0	Drip crystals
247-253	H	1.0-3.0	Drip crystals
253			Granular crust
253-260	H	1.0-3.0	Drip crystals; harder than above layers
260-267	H	1.0-2.0	
267-272	H	1.0-3.0	Drip crystals; softer than 253-267
272-274	H	1.0-2.0	Harder than above layer
274			Granular crust
274-281	H	1.0-2.0	
281-286	H	1.0-3.0	Drip crystals; softer than layer above
286			Granular crust
286-289	S	2.0-6.0	Drip crystals
289-299	H	2.0-3.0	
299			Granular crust
299-309	H	1.0-4.0	Drip crystals; harder than layer above
309-311	VH	1.0-2.0	
311-315	H	1.0-2.0	

IGY Byrd Traverse 1958-59

Station Mile 534

Date 21 December 1958

Observers Long, Doumani

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
315-325	.421	L	M	No. 2 crust at 3 cm
325-335	.452	M	M	
335-340	.412	L	M	No. 1 crust at 1.2 cm
340-343	.507	M	S	
343-352	.457	M	M	
352-361	.437	L	M	
361-366	.444	M	M	
366-373	.456	M	S	No. 2 crust at 0 to 0.7 cm (Very large grains at 3.2 to 3.8 cm)
373-376	.429	L	M	No. 1 crust at 0.2 to 0.7 cm
376-386	.456	M	M	
386-396	.447	M	M	No. 2 crust with adjacent very loose zone
396-401	.452	L	M	
401-408	.438	L	M	No. 3 crust at 2.5 cm
408-418	.406	M	M	
418-428	.447	M	M	
428-435	.458	M	M	
435-447	.468	M	S	No. 2 crust at 0.2 cm
447-457	.466	M	M	No. 2 crust at 7.7 cm
457-466	.508	M	M	
466-474	.487	M	M	No. 3 crust at 4.5 cm
474-477	.478	M	M	
477-485	.495	M	S-M	0 to 1.8 cm, packing M, grain size, S; 1.8 to 8.4 cm, packing M, grain size M
485-488	.519	M	S	
488-492	.499	M	M	
492-502	.488	M	M	
502-508	.391	L	M	
508-511	.497	M	S	
511-517	.470	L	M	Very loose zone at 0.5 to 1.0 cm
517-522	.493	M	M	No. 2 crust at 4.4 to 5.0 cm
522-528	.522	M	S	
528-535	.472	M	M	
535-542	.515	M	S	
542-552	.502	M	M	
552-557	.513	M	S	
557-567	.519	M	S	
567-572	.504	M	M	
572-580	.502	M	M	No. 2 crust at 1.0 to 1.5 cm
580-590	.490	M	M	
590-595	.513	M	M	No. 2 crust at 0.8 cm
595-605	.503	M	M	

Depth cm	Density	Packing	Grain Size	Remarks
605-610	.497	M	M	No. 2 crust at 1.0 cm
610-614	.516	M	M	
614-621	.514	M	M	
621-624	.557	M	S	
624-629	.500	M	M	
629-635	.518	M	M	No. 2 crust at 6.0 to 6.5 cm
635-641	.492	L	M	No. 2 crust at 3.7 cm
641-647	.521	M	M	
647-655	.529	M	M	
655-661	.548	M	S	No. 1 crust at 0.2 to 1.3 cm
661-666	.543	M	S	
666-676	.520	M	M	No. 2 crust at 8.5 cm
676-682	.540	M	S	
682-692	.548	M	S	
692-697	.565	M	S	No. 2 crust at 3.5 cm to 4.5 cm
697-702	.530	M	M	
702-707	.524	L	M	No. 1 crust at 0.5 cm
707-713	.517	M	M	No. 2 crust at 0.7 cm
713-719	.536	M	M	No. 3 crust at 1.0 cm
719-723	.525	M	M	
723-733	.534	M	S	No. 3 crust at 0.5 cm
733-738	.536	M	M	
738-743	.554	M	M	Triple No. 1 crust at 0.5 to 1.2
743-750	.525	M	M	
750-760	.536	M	S	
760-767	.531	M	M	No. 1 crust at 0.7 to 1.7 cm
767-774	.529	M	M	Break at 4 cm
774-779	.563	D	S	
779-783	.565	M	S	
783-791	.536	M	M	
791-800	.530	M	M	
800-804	.548	M	S	No. 3 crust at 0.5 cm
804-812	.536	M	M	No. 1 crust at 1.1 to 1.8; double No. 1 crust at 0 to 0.7 cm
812-819	.528	M	M	
819-830	.559	M	S	
830-835	.584	M	S	
835-842	.558	M	M	No. 2 crust at 5.5 cm
842-848	.555	M	M	
848-852	.567	M	S	
852-862	.535	M	M	
862-870	.553	M	M	No. 3 crust at 3.5 to 5.5 cm
870-876	.543	M	M	
876-883	.542	M	M	No. 3 crust at 3.0 cm
883-887	.553	M	L	
887-897	.539	M	M	

Depth cm	Density	Packing	Grain Size	Remarks
897- 945	.551	M	M	
945- 950	.558	D	M	
950- 955	.559	M	M	No. 2 crust at 0.4 to 1.2 cm
955- 959	.551	M	M	No. 2 crust at 2.0 cm
959- 962	.616	D	S	No. 1 crust at 0-1.0 cm
962- 964	.565	M	M	
964- 966	.565	M	S	
966- 975	.557	M	M	
975- 981	.569	M	M	No. 3 crust at 3.4 cm
981- 985	.562	M	M	No. 1 crust at 1.5 to 2.1 cm
985- 988	.600	M	S	
988- 994	.585	D	M	
994- 999	.554	M	M	
999-1002	.588	D	M	
1002-1007	.551	M	M	
1007-1010	.597	D	M	
1010-1018	.554	M	M	
1018-1027	.579	D	M	
1027-1033	.565	D	M	
1033-1036	.620	D	S	
1036-1041	.567	M	M	
1041-1049	.559	M	M	No. 3 crust at 0.5 cm
1049-1057	.545	M	M	Break at 6.0 cm
1057-1061	.586	M	M	
1061-1064	.588	D	S	
1064-1074	.588	D	M	
1074-1077	.615	D	M	
1077-1080	.579	M	M	No. 2 crust at 3.5 cm
1080-1086	.557	M	L	
1086-1093	.579	D	M	
1093-1099	.573	M	M	Double No. 2 crust at 0.5 cm and at 4.2 cm
1099-1107	.576	D	M	No. 1 crust at 0.3 cm
1107-1112	.600	D	M	No. 2 crust at 1.5 cm
1112-1119	.574	M	M	No. 2 crust at 2.0 cm
1119-1122	.574	M	L	
1122-1128	.573	M	M	Double No. 2 crust at 0 to 0.8 cm and at 5.0 to 5.8 cm
1128-1134	.567	M	M	
1134-1144	.556	M	M	
1144-1148	.556	M	L	No. 2 crust at 1.5 cm
1148-1158	.565	D	M	
1158-1165	.583	D	M	
1165-1172	.602	D	M	Double No. 1 crust at 0.2 cm
1172-1179	.586	D	M	
1179-1189	.582	D	M	
1189-1196	.568	M	L	

Depth cm	Density	Packing	Grain Size	Remarks
1196-1200	.611	D	M	
1200-1207	.576	D	L	
1207-1217	.581	D	M	Double No. 1 crust at 0.7 to 1.3 cm
1217-1227	.594	D	M	No. 3 crust at 9.0 cm
1227-1236	.582	D	M	
1236-1240	.593	M	L	No. 2 crust at 3.0 cm
1240-1246	.595	D	M	
1246-1249	.580	M	L	
1249-1252	.595	M	L	Double No. 2 crust at 0.3 to 1.2 cm
1252-1258	.583	M	M	
1258-1268	.581	D	M	Double No. 2 crust at 0.5 cm
1268-1271	.594	L	M	Triple No. 1 crust at 0.5 to 1.2 cm
1271-1276	.576	M	M	
1276-1280	.595	M	L	
1280-1286	.578	M	M	No. 2 crust at 0 to 0.7 cm
1286-1292	.597	D	M	
1292-1302	.600	D	M	
1302-1308	.599	M	L	Double No. 1 crust at 0.2 to 1.0 cm
1308-1312	.608	L	M	Double No. 1 crust at 0.8 to 1.5 cm
1312-1319	.591	D	L	
1319-1324	.595	D	M	Double No. 1 crust at 0.8 to 1.3 cm
1324-1334	.585	D	M	No. 3 crust at 1.5 cm
1334-1344	.582	D	M	
1344-1354	.597	D	M	
1354-1358	.587	M	M	
1358-1362	.622	D	M	
1362-1368	.613	D	M	No. 3 crust at 2.5 cm
1368-1373	.615	D	M	
1373-1377	.604	M	M	
1377-1385	.604	D	M	No. 2 crust at 7.1 to 7.6 cm
1385-1388	.608	D	M	
1388-1398	.601	D	M	
1398-1404	.611	D	M	
1404-1414	.603	D	M	
1414-1421	.601	M	L	No. 2 crust at 0.4 cm; No. 2 crust at 6.3 to 7.6 cm
1421-1428	.596	M	M	
1428-1437	.600	M	M	No. 1 crust at 0.5 to 1.3 cm
1437-1441	.608	M	L	No. 2 crust at 2.5 cm
1441-1448	.604	D	L	Triple No. 1 crust at 0.7 cm; double No. 2 crust at 1.4 cm
1448-1456	.609	D	M	
1456-1466	.603	D	M	
1466-1473	.623	M	M	No. 2 crust at 2.7 cm
1473-1481	.620	D	M	
1481-1491	.606	D	M	No. 3 crust at 6.7 cm
1491-1498	.607	M	M	No. 2 crust at 0 to 0.6 cm

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
Mile 540	
22 December 1958	
3- 12	4
12- 16	22
16- 21	44
21- 26	32
26- 32	26
32- 37	32
37- 41	32
41- 45	47
45- 49	77
49- 52	52
52- 58	62
58- 61	32
61- 66	26
66- 72	32
72- 78	32
78- 81	63
81- 83	93
83- 85	103
85- 90	83
90- 93	85
93- 96	115
96-102	85
102-106	153
106-110	80
110-115	71
115-119	50
119-124	35
124-132	27
132-140	42
140-143	65
143-147	95
147-152	95
152-158	80
158-165	160
165-168	245
168-170	185
170-175	78
175-182	57
182-189	84
189-194	96
194-201	96
201-205	118
205-210	186
210-216	186
216-222	96
222-229	84
229-232	96
232-238	126
238-242	231
242-244	96
244-250	126
250-258	74
258-260	141
260-266	231
266-272	231
272-275	306
275-278	216
278-280	457
280-290	382
290-296	382
296-300	269
300-305	217
305-311	282
311-315	307
315-318	457
318-322	382
322-327	757
327-334	632
334-336	532
336-339	507
339-342	357
342-345	257
345-350	367
350-355	367
355-358	357
358-362	382
362-365	407
365-368	457
368-370	532
370-376	757
376-380	947
380-384	1000+
384-388	907
388-393	397
393-400	457
Mile 546	
21 December 1958	
3- 9	7
9- 12	5
12- 20	14
20- 25	22
25- 29	32
29- 35	42
35- 38	32
38- 45	32
45- 49	54
49- 52	92
52- 56	90
56- 58	77
58- 68	27
68- 72	40
72- 76	52
76- 82	52
82- 88	62
88- 94	85
94- 99	63
99-104	83
104-107	85
107-114	74
114-116	53
116-122	45
122-127	73
127-131	78
131-137	103
137-139	178
139-143	93
143-145	178
145-149	57
149-154	65
154-159	71
159-164	40
164-170	55
170-177	52
177-182	95
182-186	118
186-193	109
193-199	66
199-208	46
208-214	66
214-220	51
220-226	141
226-229	96
229-236	71
236-243	108
243-248	186
248-252	276
252-257	238
257-259	411

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
259-263	276
263-267	344
267-270	406
270-276	156
276-282	131
282-287	217
287-291	419
291-298	262
298-301	357
301-305	532
305-310	367
310-313	607
313-318	367
318-320	457
320-324	232
324-330	307
330-334	195
334-337	307
337-341	307
341-345	382
345-348	507
348-353	757
353-358	907
358-360	382
360-364	307
364-369	307
369-374	217
374-378	382
378-384	332
384-386	532
386-391	757
391-394	357
394-400	282

Mile 552
21 December 1958

Depth cm	Hardness Number, Kg
2- 10	11
10- 14	27
14- 18	15
18- 24	18
24- 30	22
30- 31	102
31- 35	47
35- 41	42
41- 46	56
46- 51	26
51- 55	47
55- 59	17
59- 64	32
64- 71	27
71- 77	42
77- 79	77
79- 83	78
83- 90	82
90- 95	93
95- 98	85
98-105	45
105-113	91
113-117	65
117-122	203
122-129	90
129-135	80
135-140	90
140-147	56
147-154	35
154-159	65
159-164	77
164-172	117
172-176	117
176-182	110
182-185	96
185-192	46
192-198	66
198-204	126
204-212	118
212-217	96
217-223	81
223-227	118
227-232	115
232-238	156
238-243	233
243-246	156
246-250	118
250-256	156
256-261	186
261-266	233
266-269	246
269-272	306
272-278	381
278-281	356
281-285	382
285-293	195
293-298	157
298-302	457
302-307	367
307-309	682
309-311	457
311-314	507
314-318	345
318-324	632
324-326	757
326-328	532
328-334	947
334-338	345
338-342	382
342-347	557
347-350	257
350-352	457
352-358	282
358-362	269
362-365	257
365-370	367
370-373	357
373-382	257
382-384	137
384-388	457
388-392	345
392-397	337
397-400	507

Mile 558
21 December 1958

Depth cm	Hardness Number, Kg
2- 8	3
8- 16	9
16- 20	12
20- 26	30
26- 29	22
29- 31	47
31- 34	52
34- 39	14
39- 44	14
44- 50	22
50- 56	26
56- 61	44
61- 66	56
66- 69	52
69- 73	24
73- 76	52
76- 81	45
81- 85	63
85- 88	101

RAM HARDNESS DATA SHEET

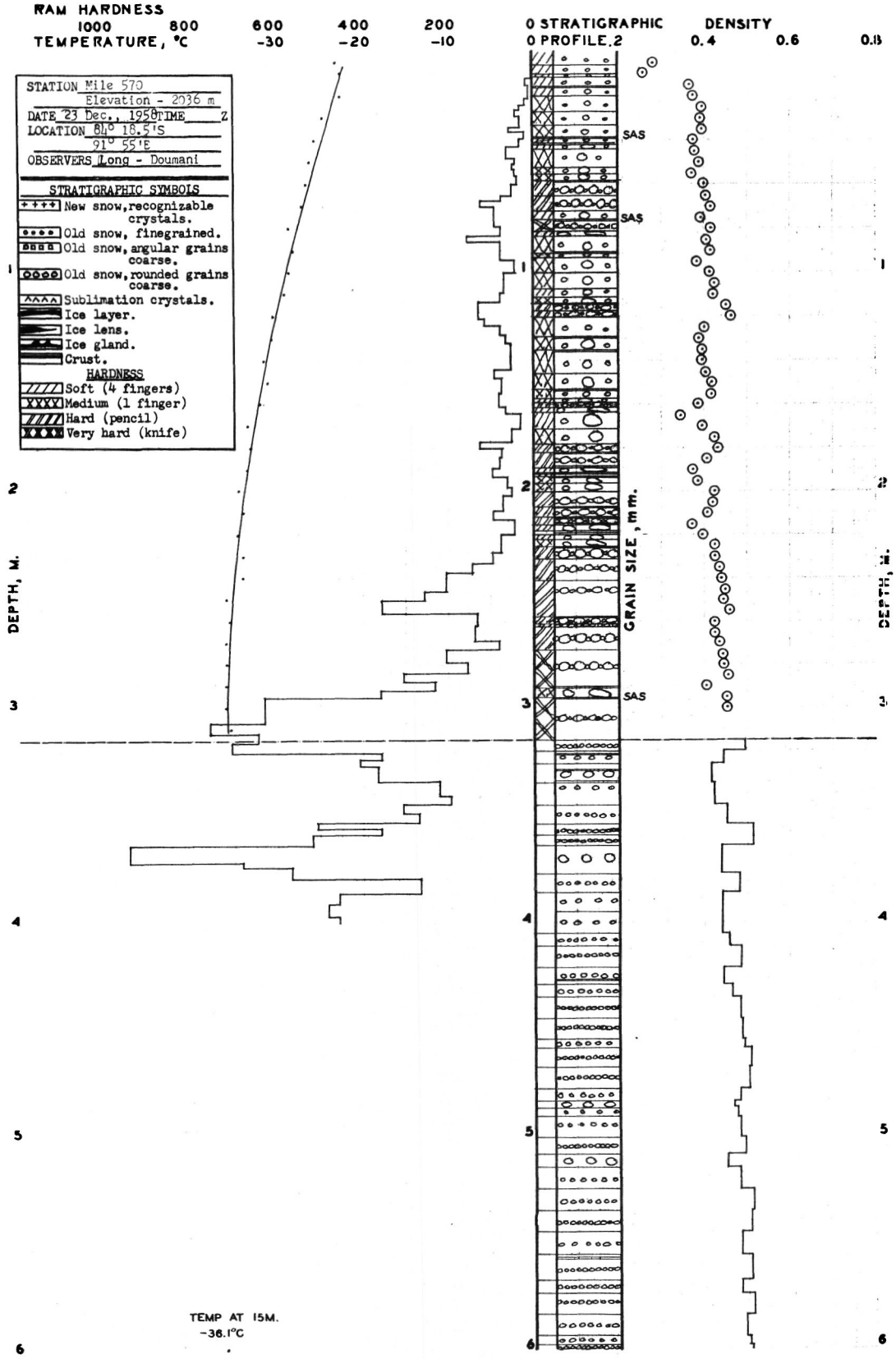
Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
88- 91	101	318-321	307	119-126	45
91- 95	91	321-324	407	126-133	63
95-100	93	324-325	757	133-139	95
100-102	203	325-328	1000+	139-142	155
102-107	73	328-329	2000	142-147	167
107-112	63	329-331	2000	147-152	237
112-114	153	331-332	3000+	152-159	160
114-116	103	332-334	3000+	159-168	95
116-121	53	334-339	1000	168-179	55
121-125	78	339-341	907	179-184	96
125-130	83	341-351	307	184-192	118
130-135	103	351-354	407	192-199	198
135-140	125	354-363	340	199-205	306
140-146	140	363-366	607	205-210	276
146-150	140	366-371	427	210-215	156
150-153	95	371-379	345	215-221	131
153-159	50	379-386	307	221-227	81
159-165	35	386-391	757	227-232	96
165-172	45	391-397	657	232-237	96
172-180	50	397-399	757	237-241	194
180-188	74	399-400	457	241-246	156
188-194	111			246-250	156
194-199	115	Mile 564		250-259	138
199-202	186	21 December 1958		259-263	268
202-206	118	2- 10	8	263-267	231
206-211	79	10- 17	22	267-272	216
211-217	111	17- 22	26	272-277	276
217-220	156	22- 28	27	277-281	381
220-229	206	28- 36	28	281-286	427
229-231	456	36- 40	47	286-290	307
231-236	216	40- 47	38	290-297	221
236-238	306	47- 51	92	297-303	232
238-241	256	51- 55	39	303-307	382
241-248	136	55- 60	20	307-313	382
248-255	156	60- 65	26	313-317	457
255-260	246	65- 69	47	317-322	757
260-264	268	69- 75	62	322-327	757
264-270	206	75- 80	56	327-332	757
270-274	194	80- 82	153	332-336	947
274-277	257	82- 88	78	336-338	457
277-286	72	88- 91	115	338-344	232
286-290	82	91- 93	253	344-350	257
290-296	132	93- 98	95	350-354	345
296-302	157	98-104	125	354-359	367
302-310	176	104-110	95	359-362	407
310-314	457	110-114	140	362-367	547
314-318	569	114-119	60	367-372	757

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
372-379	965				
379-382	1000				
382-386	785				
386-390	719				
390-395	337				
395-400	397				


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION Mile 570
Elevation - 2036 m
DATE 23 Dec., 1958 TIME Z
LOCATION 84° 18.5'S
91° 55'E
OBSERVERS Long - Doumani
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS
SAS
SAS
GRAIN SIZE, mm.
DEPTH, M.
DEPTH, M.
TEMP AT 15M.
-36.1°C

IGY Byrd Traverse 1958-59

Station Mile 570

Date 23 December 1958

Observers Long, Doumani

STRATIGRAPHIC DATA SHEET

Depth cm	Hard-ness	Grain Size, mm	Remarks
0- 6	S	<.5	
6- 10	S	<.5	Softer than surface layer
10- 11	M	<.5	
11- 16	S	<1.0	
16			Crust
16- 20	S	.5-1.0	
20- 27	M	.5-1.0	
27- 33	M	.5-1.0	
33- 39	M	.5-1.0	Slightly harder than 27-33
39			Sastrugi surface and crust
39- 41	S	.5-1.0	
41			Granular crust
41- 42	S	1.0-2.0	Drip crystals; loose; softer than 39-41
42- 44	S	1.0-2.0	Drip crystals, more firm than above layer
44- 52	M	.5-1.5	
52- 55	S	1.0-2.0	
55- 58	S	1.0-1.5	
58			Granular crystals
58- 65	H	1.0-2.0	
65- 72	H	.5-1.5	
72- 76	S	1.0-2.0	Drip crystals
76- 81	VH	.5-1.0	
76			Sastrugi surface
81- 83	S	2.0-4.0	Loose, drip crystals
83- 91	M	1.0-1.5	
91			Granular crust
91- 93	M	.5-1.0	
93-100	M	1.0-2.0	Drip crystals, softer than 91-93
100-107	M	1.0-2.0	Similar to 91-93
107-111	S	1.0-1.5	
111-114	M	1.0-2.0	
113			Crust
114-117	H	1.0-1.5	
117-120	H	1.0-1.5	
120-129	M	.5-1.0	
129			Crust
130-135	M	1.0-2.5	
135			Crust
135-146	M	1.0-1.5	Firmer than above layer
146-153	M	1.0-2.0	Drip crystals
153			Crust
153-157	M	1.0-1.5	
157-159	S	1.0-3.0	Drip crystals

Depth cm	Hardness	Size, mm	Remarks
159-161	H	.5-1.5	
161-163	S	2.0-5.0	Drip crystals
163-171	S	1.0-4.0	Drip crystals
171-178	M	1.0-3.0	Drip crystals
178-182	H	1.0-1.5	
182			Crust
182-189	H	1.0-1.5	
189			Crust
189-191	S	1.0-5.0	Drip crystals; loose
191-192	M	1.0-2.0	Drip crystals
192-193	S	1.0-3.0	Drip crystals, loose
193			Crust
193-196	M	1.0-2.0	Drip crystals
196-200	M	1.0-3.0	
200-207	H	1.0-2.0	Drip crystals
207			Very thin sastrugi crust
207-212	H	1.0-2.0	
212			Crust
212-215	H	.5-1.5	
215-218	S	2.0-4.0	Drip crystals
218-220			Three very thin crusts with loose layers in between
220-222	S	1.0-2.0	
222-225	M	1.0-3.0	Drip crystals
225			Thin crust
225-231	H	1.0-3.0	Drip crystals
231-241	H	.5-1.5	Harder than 225-231
241-258	H	.5-1.5	
258			Crust
258-261	H	1.0-2.0	
261-262	H	1.0-2.0	Drip crystals, hardness like 225-231
262-273	H	1.0-3.0	Drip crystals, harder than above layer
273-291	VH	1.0-2.0	
291			Crust
291-295	M	2.0-5.0	Drip crystals
295			Sastrugi surface
295-315	VH	1.0-1.5	

IGY Byrd Traverse 1958-59

Station Mile 570

Date 23 December 1958

Observers Long, Doumani

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
315-320	.495	D	S	
320-326	.445	L	S	No. 3 crust at 1.1 cm
326-335	.417	L	M	No. 2 crust at 3 cm and at 6.5 cm
335-345	.421	L	M	
345-354	.452	M	S	
354-359	.512	D	S	
359-364	.511	D	S	
364-377	.438	L	M	
377-386	.482	M	S	
386-395	.441	L	S	
395-405	.440	L	S	
405-411	.456	M	S	
411-421	.486	D	S	
421-429	.446	M	S	No. 2 crust at 0.6 cm; loose area adjacent
429-435	.465	M	S	
435-445	.484	D	S	
445-455	.488	D	S	
455-459	.492	M	S	
459-468	.507	D	S	
468-478	.504	D	S	
478-484	.485	M	S	
484-487	.468	L	M	
487-492	.476	L	S	
492-501	.482	M	S	
501-509	.494	D	S	
509-515	.452	L	M	
515-525	.482	M	S	
525-535	.511	M	S	
535-545	.508	D	S	
545-556	.484	M	S	
556-568	.508	D	S	No. 2 crust at 1.0 cm
568-574	.485	D	S	
574-584	.511	D	S	
584-594	.495	M	S	
594-598	.502	M	S	
598-603	.506	D	S	
603-611	.496	M	S	
611-619	.507	D	S	
619-624	.484	L	M	Double No. 1 crust at 0.7 cm and break at 3.5 cm
624-630	.505	D	S	
630-636	.543	D	S	
636-646	.534	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
646-653	.539	D	S	No. 3 crust at 6.3 cm
653-662	.523	D	S	
662-670	.534	D	S	
670-679	.521	D	S	
679-688	.523	D	S	
688-690	.523	M	S	No. 2 crust at end
690-694	.502	M-L	S	0-3 cm, packing M, grain size S; 3-4.1 cm packing L, grain size S
694-698	.516	M	S	
698-705	.523	D	S	
705-713	.523	D	S	
713-720	.501	L	M	
720-729	.512	M	S	
729-739	.539	D	S	
739-746	.512	M	M	
746-752	.556	D	S	
752-758	.547	D	S	No. 2 crust at 0.2 cm
758-768	.533	M	S	No. 2 crust at 0.5 cm
768-775	.518	M	S	
775-780	.541	M	S	
780-790	.530	D	S	No. 3 crust at 8.5 cm
790-794	.525	M	S	
794-801	.535	M	S	
801-804	.551	D	S	
804-812	.541	D	S	
812-817	.552	M	S	Double No. 3 crust at 3.2 cm
817-822	.532	M	M	No. 1 crust at 0 to 1.4 cm
822-830	.525	M	S	
830-835	.522	M	S	
835-839	.562	D	S	
839-849	.543	D	S	
849-859	.531	D	S	
859-869	.547	D	S	
869-875	.548	M	S	
875-881	.563	D	S	
881-892	.562	D	S	
892-900	.528	M	S	
900-906	.544	M	S	
906-917	.548	M	S	
917-922	.551	M	S	
922-932	.531	D	M	
932-942	.539	D	S	
942-951	.553	D	S	
951-954	.569	M	S	No. 1 crust at 2.4 to 2.9 cm
954-959	.514	M	S	
959-964	.534	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
964- 969	.537	M	S	No. 3 crust at 0.8 cm
969- 974	.569	M	S	
974- 984	.573	D	S	
984- 989	.569	M	S	
989- 997	.565	D	S	
997-1007	.565	D	S	
1007-1017	.545	M	M	
1017-1027	.565	D	M	
1027-1035	.554	D	S	
1035-1043	.556	D	S	
1043-1050	.557	D	S	
1050-1058	.564	D	S	No. 3 crust at 7.5 cm
1058-1067	.556	D	M	
1067-1074	.562	D	S	
1074-1085	.573	D	S	
1085-1094	.559	D	M	No. 1 crust at 8.7 to 9.6 cm
1094-1104	.581	D	S	
1104-1114	.568	D	S	No. 3 crust at 4 cm
1114-1124	.572	D	M	
1124-1134	.578	D	S	No. 3 crust at 5 cm
1134-1144	.578	D	S	No. 1 crust at 9.1 to 9.5 cm
1144-1153	.581	D	M	No. 1 crust at 8.6 to 9.3 cm
1153-1159	.563	D	M	Break at 4.5 cm
1159-1164	.594	D	S	
1164-1170	.576	D	S	
1170-1180	.574	D	M	No. 1 crust at 1.0 cm
1180-1186	.570	D	S	No. 1 crust at 0.7 to 1.4 cm
1186-1196	.577	D	S	No. 2 crust at 3.3 cm
1196-1204	.581	D	S	No. 1 crust at 0 to 1.0 cm
1204-1212	.576	D	S	
1212-1219	.570	D	S	No. 1 crust at 0.7 to 1.4 cm
1219-1225	.577	D	S	No. 2 crust at 3.3 cm
1225-1234	.581	D	S	No. 1 crust at 0 to 1.0 cm
1234-1242	.576	D	S	
1242-1252	.573	D	S	No. 2 crust at 9 cm
1252-1258	.559	D	M	Double No. 1 crust at 0.7 to 1.3 cm; No. 2 crust at 4.5 cm
1258-1268	.566	D	S	No. 3 crust at 6.5 cm
1268-1270	.622	M	S	
1270-1278	.547	M	M	No. 1 crust at 0 to 1.7 cm
1278-1281	.573	M	S	
1281-1291	.579	D	S	
1291-1297	.592	D	S	No. 1 crust at 0 to 0.8 cm; double No. 3 crust at 6.0 cm
1297-1305	.571	D	M	
1305-1314	.565	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
1314-1321	.556	M	M	
1321-1330	.581	D	M	
1330-1338	.586	D	S	No. 1 crust at 8.0 cm
1338-1344	.585	D	S	
1344-1353	.582	D	S	No. 2 crust at 0.5 cm
1353-1359	.605	D	S	
1359-1369	.584	D	M	
1369-1380	.574	D	M	No. 3 crust at 1.0 cm
1380-1386	.584	D	M	Break at 3 cm
1386-1397	.576	D	M	
1397-1406	.588	D	M	No. 2 crust at 5 cm
1406-1411	.558	M	S	
1411-1416	.578	D	S	
1416-1425	.568	M	M	
1425-1430	.579	M	M	Break at 1.5 cm
1430-1436	.590	D	M	
1436-1446	.597	D	M	
1446-1451	.581	D	M	No. 1 crust at 0.5 to 1.1 cm
1451-1457	.575	D	M	No. 1 crust at 0.1 cm

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
Mile 576	
24 December 1958	
4- 11	5
11- 18	16
18- 21	25
21- 26	37
26- 31	37
31- 35	47
35- 40	26
40- 45	20
45- 52	23
52- 58	22
58- 61	32
61- 66	32
66- 68	62
68- 71	72
71- 76	62
76- 81	62
81- 87	45
87- 94	31
94-100	45
100-105	73
105-109	91
109-111	253
111-115	117
115-120	78
120-126	65
126-132	65
132-138	50
138-143	42
143-149	50
149-154	60
154-160	95
160-163	305
163-169	65
169-175	95
175-178	30
178-186	118
186-190	209
190-195	61
195-201	66
201-208	96
208-213	115
213-219	141
219-224	186
224-228	66
228-234	111
234-240	126
240-246	201
246-252	306
252-257	276
257-262	238
262-267	246
267-275	175
275-280	246
280-286	457
286-291	307
291-294	157
294-298	232
298-305	221
305-309	269
309-314	307
314-317	357
317-321	457
321-325	307
325-330	367
330-337	221
337-342	217
342-345	357
345-348	157
348-353	307
353-357	345
357-359	457
359-364	277
364-370	307
370-376	457
376-379	457
379-382	757
382-390	195
390-395	277
395-398	407
398-400	457
Mile 582	
24 December 1958	
1- 4	12
4- 13	8
13- 18	14
18- 24	17
24- 29	7
29- 35	20
35- 39	32
39- 42	32
42- 54	74
54- 56	92
56- 62	32
62- 67	26
67- 71	54
71- 74	22
74- 80	33
80- 82	78
82- 86	40
86- 91	33
91- 93	93
93- 97	78
97-102	93
102-108	69
108-111	103
111-116	43
116-121	43
121-126	65
126-131	73
131-135	78
135-138	85
138-142	258
142-148	105
148-152	80
152-156	140
156-160	95
160-164	50
164-169	42
169-172	65
172-175	186
175-178	126
178-188	43
188-194	66
194-202	51
202-206	231
206-210	254
210-212	186
212-218	81
218-222	118
222-226	141
226-230	118
230-232	186
232-237	276
237-242	258
242-245	246
245-250	96
250-255	149
255-259	118

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
259-264	132
264-268	181
268-271	306
271-276	306
276-280	194
280-285	277
285-290	247
290-296	207
296-300	269
300-304	682
304-310	507
310-312	382
312-318	182
318-321	407
321-324	307
324-327	137
327-329	457
329-337	232
337-341	269
341-346	217
346-352	157
352-357	307
357-362	457
362-365	807
365-372	1050
372-382	757
382-384	119
384-393	307
393-398	367
398-400	532

Mile 588
24 December 1958

Depth cm	Hardness Number, Kg
2- 8	10
8- 15	11
15- 20	16
20- 24	27
24- 29	20
29- 32	72
32- 38	177
38- 41	84
41- 46	52
46- 50	52
50- 54	40
54- 62	27
62- 66	102
66- 74	140
74- 81	95
81- 84	95
84- 89	43
89- 98	45
98-103	78
103-113	42
113-116	95
116-121	78
121-130	65
130-136	95
136-144	95
144-148	95
148-155	83
155-164	95
164-169	185
169-174	131
174-177	95
177-180	65
180-184	164
184-186	231
186-189	156
189-191	186
191-196	437
196-199	126
199-204	115
204-208	118
208-211	186
211-215	96
215-222	51
222-230	118
230-235	96
235-240	115
240-245	132
245-251	156
251-255	209
255-261	181
261-266	216
266-269	406
269-275	306
275-278	206
278-283	126
283-288	277
288-297	207
297-302	427
302-304	457
304-308	269
308-311	307
311-314	507
314-319	337
319-322	357
322-327	217
327-330	807
330-335	517
335-339	195
339-342	257
342-345	357
345-349	307
349-353	457
353-360	177
360-364	269
364-369	337
369-374	367
374-381	499
381-384	357
384-388	382
388-392	832
392-400	307

Mile 594
24 December 1958

Depth cm	Hardness Number, Kg
1- 9	17
9- 14	22
14- 16	27
16- 23	36
23- 28	56
28- 31	172
31- 36	32
36- 38	32
38- 41	92
41- 45	77
45- 49	77
49- 52	62
52- 56	77
56- 61	72
61- 65	52
65- 71	35
71- 75	64
75- 77	68
77- 87	33
87- 92	63
92- 97	73
97-100	85
100-105	103
105-110	143

RAM HARDNESS DATA SHEET

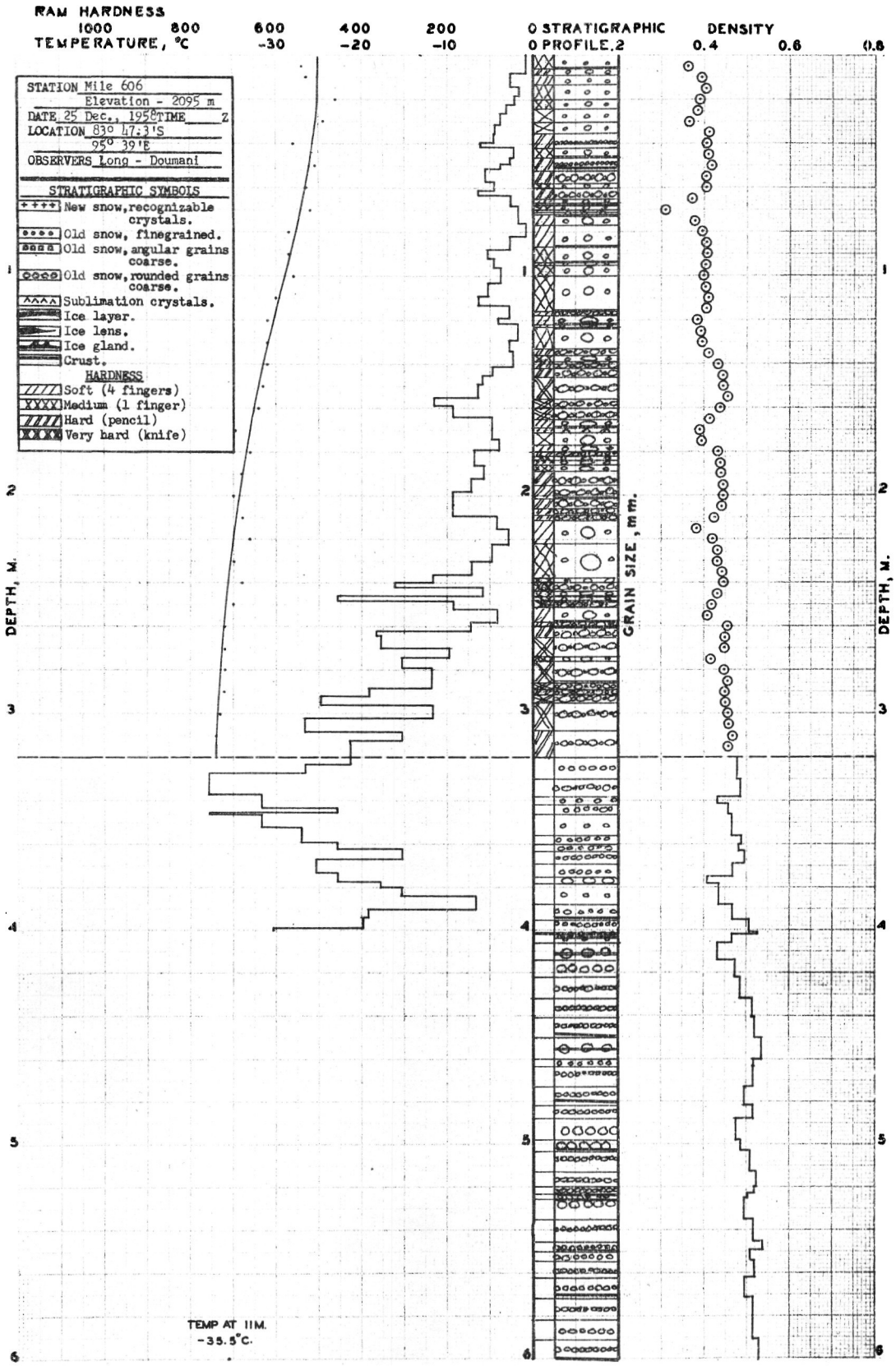
Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
110-112	128	319-322	357	114-123	105
112-118	78	322-328	132	123-129	95
118-121	69	328-330	382	129-133	73
121-128	69	330-335	277	133-137	50
128-130	77	335-341	157	137-142	78
130-135	167	341-346	277	142-150	185
135-138	45	346-350	195	150-158	63
138-142	95	350-357	157	158-165	57
142-145	125	357-359	457	165-169	27
145-151	80	359-360	607	169-174	95
151-156	95	360-367	177	174-178	73
156-158	95	367-371	307	178-182	27
158-161	95	371-378	349	182-188	96
161-165	117	378-382	419	188-191	216
165-167	230	382-396	592	191-198	171
167-169	185	396-400	947	198-201	276
169-178	45			201-203	186
178-182	50	Mile 600		203-206	186
182-186	96	24 December 1958		206-209	276
186-190	96	2- 5	25	209-216	198
190-192	408	5- 11	44	216-220	141
192-197	96	11- 14	35	220-227	171
197-202	96	14- 18	27	227-234	186
202-206	74	18- 21	19	234-240	201
206-209	156	21- 23	32	240-249	288
209-211	276	23- 29	26	249-255	206
211-213	456	29- 31	77	255-263	286
213-218	126	31- 35	24	263-269	256
218-226	62	35- 38	52	269-273	156
226-228	81	38- 42	24	273-278	186
228-231	106	42- 47	20	278-284	307
231-238	94	47- 51	32	284-293	139
238-245	94	51- 54	52	293-299	382
245-250	66	54- 57	52	299-305	307
250-255	96	57- 62	92	305-309	307
255-260	96	62- 68	117	309-315	157
260-265	156	68- 70	77	315-324	225
265-268	256	70- 75	42	324-325	607
268-272	268	75- 78	164	325-332	499
272-278	207	78- 80	185	332-336	207
278-285	221	80- 86	50	336-340	345
285-289	345	86- 90	42	340-346	257
289-295	207	90- 95	95	346-350	382
295-298	115	95-100	40	350-357	542
298-305	157	100-104	72	357-361	757
305-315	307	104-110	80	361-372	687
315-319	269	110-114	140	372-376	269

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
376-379	457				
379-390	3450				
390-397	622				
397-400	807				


RAM HARDNESS
1000 800
TEMPERATURE, °C
600 400 200
-30 -20 -10
0 STRATIGRAPHIC
0 PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION Mile 606
Elevation - 2095 m
DATE 25 Dec., 1958 TIME Z
LOCATION 83° 47.3'S
95° 39'E
OBSERVERS Long - Doumani
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 11M.
-35.5°C.

IGY Byrd Traverse 1958-59

Station Mile 606

Date 25 December 1959

Observers Long, Doumani

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 6	M	< .5	
6			Thin crust
6- 9	S	.5-1.0	
9- 13	S	<1.0	Slightly harder than 6-9
13- 20	M	<1.0	
20- 24	M	.5-1.0	Slightly softer than layer above
24- 30	M	<1.0	
30- 35	M	.5-1.0	
35- 42	H	< .5	
42- 46	M	.5-1.0	
46			Thin crust
46- 51	H	< .5	
51			Thin crust
51- 52	M	.5-1.0	
52			Thin crust
52- 58	H	.5-1.0	Small drip crystals
58- 60	M	.5-1.0	
60- 65	H	.5-1.0	
65- 67	S	.5-1.0	
67			Thin crust
67- 68	S	.5-1.5	
68			Thin crust, softer than layer above
68- 70	M	.5-1.0	
70- 77	S	1.0-4.0	Drip crystals; sublimation crystals; loose
77- 87	S	1.0-1.5	Not as soft and loose as layer above
87			Crust
87- 94	M	1.0-1.5	
94			Crust
94- 95	S	1.0-2.0	Drip crystals
95-100	M	1.0±	
100-116	M	1.0-1.5	Firmer than above layer
116			Crust
116-118	H	1.0-1.5	
118-122	S	1.0-3.0	Drip crystals
121			Crust
122-123	S	1.0-3.0	Drip crystals
123			Crust
123-133	H	1.0-2.0	
133-136	H	1.0-1.5	
136-139	M	1.0-2.0	
139-142	H	1.0-1.5	
142-146	H	1.0-1.5	

Depth cm	Hardness	Grain Size, mm	Remarks
146-156	VH	1.0-1.5	
156-160	VH	.5-1.0	Harder than 146-156 and 160-165
160-165	VH	1.0-1.5	Drip crystals
165-169	S	1.0-3.0	Drip crystals
169			Crust
169-171	S	2.0-4.0	Sublimation layer, loose; drip crystals
171			Crust
171-177	M	1.0-2.0	Drip crystals
177-180	S	1.0-2.0	
180-182	H	1.0-1.5	
182-184	M	1.0-2.0	Drip crystals
184-186	M	1.0-1.5	
186-189	M	1.0-2.0	
189-195	H	1.0-2.0	Drip crystals
195-201	H	.5-1.0	Harder than layer above
201			Crust
201-206	H	1.0-1.5	Drip crystals
206-209	H	1.0-2.0	Drip crystals; less compact than 201-206 or 209-211
209			Crust
209-211	H	.5-1.0	
211-222	S	1.0-3.0	Drip crystals
222-238	M	1.0-1.5	
238-240	M	1.0*	
240-244	VH	.5-1.0	
244-246	M	1.0-2.0	
246			Thin crust
246-248	S	1.0-2.0	Drip crystals
248			Granular crust
248-251	VH	.5-1.5	
251-258	S	1.0-2.0	
258			Granular crust
258-260	H	1.0-1.5	
260			Crust
260-265	H	1.0-2.0	
265-274	VH	.5-1.0	
274-276	M	1.0-2.0	
276-286	VH	.5-1.5	
286			Thin crust
286-289	VH	.5-1.0	
289-291	H	1.0-1.5	
291-295	VH	.5-1.0	
295			Thin crust with 0.5 cm loose layer below it
295-308	VH	1.0-1.5	
308-320	H	.5-1.0	

IGY Byrd Traverse 1958-59

Station Mile 606

Date 25 December 1958

Observers Long, Doumani

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size, mm	Remarks
320-330	.478	M	S	
330-338	.485	S	D	
338-341	.431	L	S	
341-346	.457	M	S	
346-356	.463	L	S	
356-360	.489	M	S	
360-363	.482	M	S	
363-369	.495	D	S	
369-375	.468	M	S	
375-378	.407	L	M	
378-388	.436	L	S	
388-395	.467	M	S	No. 3 crust at 6.5 cm
395-401	.506	D	S	
401-402	.527	M	S	
402-406	.463	L	S	No. 2 crust at 0.7 cm
406-414	.431	L	M	No. 2 crust at 5 cm
414-422	.473	M	M	
422-432	.486	D	S	
432-441	.512	D	S	
441-450	.520	D	S	No. 1 crust at 7.8 to 8.3 cm
450-460	.436	L	M	No. 2 crust at 5.1; break at 2 cm
460-463	.514	M	S	
463-473	.513	D	S	
473-482	.495	D	S	No. 2 crust at 7.7 to 8.3 cm
482-488	.516	D	S	
488-498	.477	M	M	
498-503	.488	M	M	No. 2 crust at 4.4 to 5 cm
503-513	.507	D	S	
513-520	.522	D	S	
520-523	.519	D	S	
523-525	.502	M	S	No. 1 crust at 2 cm with loose layer below; No. 1 crust at 0.5 cm
525-535	.494	M	M	
535-545	.516	D	S	
545-549	.539	D	S	No. 1 crust at 3.5 to 3.9 cm
549-554	.507	M	S	
554-562	.518	D	S	
562-571	.495	M	S	No. 1 crust at 8.3 to 8.6 cm
571-581	.516	D	S	
581-591	.516	M	S	
591-601	.528	D	S	No. 1 (double) at 9.7 to 10.7 cm
601-607	.548	D	S	

Depth cm	Density	Packing	Grain Size, mm	Remarks
607-616	.500	D	M	
616-626	.520	D	S	
626-636	.518	D	M	
636-642	.524	M	M	
642-652	.519	D	M	
652-656	.554	D	S	
656-666	.539	D	S	
666-673	.554	D	S	No. 1 crust at 6.8 cm
673-681	.516	M	M	Loose and break at 6 to 6.5 cm
681-687	.515	M		
687-695	.538	M	S	
695-708	.538	D	S	No. 1 crust at 11.2 to 12.3 cm
708-718	.548	D	S	No. 1 crust at 8.5 to 9 cm
718-726	.533	D	S	
726-735	.253	D	M	No. 3 crust at 5.8 cm
735-738	.538	D	M	No. 2 crust at 3.5 cm
738-743	.523	D	S	
743-753	.522	D	M	
753-759	.559	D	S	
759-769	.529	D	M	
769-774	.535	D	S	
774-786	.548	D	S	
786-790	.565	D	S	Double No. 2; 3.5 to 4.4 cm
790-793	.557	M-D	S	0 to 1.5 cm, M packing, S grains; 1.5 to 2.8 cm, D packing, S grains; No. 1 crust at 1.5 cm
793-803	.535	D	S	
803-809	.545	D	S	
809-814	.570	D	S	No. 3 crust at 0.7 cm
814-823	.557	D	S	
823-831	.556	D	S	No. 1 crust at 5.6 cm
831-832	.571	D	S	
832-836	.565	D	S	
836-843	.551	D	S	
843-853	.555	D	S	No. 3 crust at 2 cm
853-863	.568	D	S	
863-868	.559	D	S	
868-873	.560	D	S	
873-880	.563	D	S	
880-884	.578	M	S	No. 1 crust at 0.8 to 1.6 cm
884-894	.559	D	M	
894-901	.565	D	S	
901-907	.575	D	S	
907-914	.544	D	M	No. 1 crust at 4.9 to 6.2 cm
914-922	.557	D	S	

Depth cm	Density	Packing	Grain Size, mm	Remarks
922- 930	.574	D	S	
930- 934	.565	D	M	No. 1 crust at 1.4 cm
934- 944	.546	D	M	
944- 951	.573	D	S	
951- 956	.567	D	S	No. 3 crust at 4.9 cm
956- 966	.566	D	M	
966- 976	.575	D	S	
976- 980	.585	D	S	No. 1 crust at 2.2 to 3.2 cm
980- 990	.565	D	S	
990- 995	.563	D	M	No. 1 crust at 1.4 to 2.3 cm
995-1002	.573	D	M	
1002-1009	.573	D	S	
1009-1019	.558	D	M	
1019-1026	.563	D	M	
1026-1030	.553	D	M	
1030-1034	.576	D	M	
1034-1044	.578	D	S	
1044-1049	.594	D	S	Double No. 1 crust at 0.6 cm
1049-1053	.570	D	M	
1053-1063	.565	D	M	
1063-1073	.576	D	S	
1073-1080	.578	D	M	No. 1 crust at 0 to 1.2 cm; No. 1 crust at 4.5 to 5.5 cm
1080-1085	.579	M	M	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
Mile 612	
26 December 1958	
5- 12	12
12- 18	12
18- 24	27
24- 28	27
28- 33	42
33- 42	36
42- 47	26
47- 48	122
48- 50	122
50- 52	92
52- 59	23
59- 64	37
64- 73	36
73- 76	52
76- 82	78
82- 88	178
88- 93	103
93- 99	165
99-105	110
105-109	230
109-114	78
114-121	45
121-126	60
126-133	83
133-137	80
137-146	105
146-152	110
152-161	95
161-166	95
166-173	70
173-179	80
179-188	136
188-196	118
196-200	118
200-207	121
207-216	66
216-221	79
221-226	96
226-229	276
229-236	261
236-240	254
240-248	398
248-254	331
254-259	156
259-265	181
265-269	194
269-275	156
275-280	156
280-285	217
285-290	247
290-295	307
295-301	182
301-306	157
306-310	345
310-315	367
315-318	457
318-322	382
322-329	542
329-335	632
335-341	632
341-347	557
347-354	349
354-366	319
366-370	419
370-376	632
376-379	357
379-384	517
384-390	632
390-392	382
392-400	345
Mile 618	
26 December 1958	
1- 9	12
9- 13	52
13- 20	44
20- 24	47
24- 30	52
30- 35	62
35- 37	77
37- 40	52
40- 46	22
46- 50	24
50- 56	32
56- 61	32
61- 70	32
70- 74	54
74- 80	77
80- 84	115
84- 89	133
89- 93	207
93- 99	50
99-112	95
112-118	65
118-122	73
122-129	45
129-134	167
134-138	207
138-141	155
141-146	114
146-150	116
150-156	80
156-163	95
163-168	95
168-171	95
171-180	115
180-186	81
186-194	28
194-198	51
198-202	141
202-207	168
207-211	209
211-218	71
218-227	106
227-229	321
229-233	256
233-236	306
236-243	160
243-251	209
251-256	151
256-265	156
265-270	186
270-275	186
275-279	254
279-286	237
286-293	225
293-299	157
299-303	195
303-305	137
305-308	357
308-312	382
312-316	457
316-322	382
322-328	457
328-332	382
332-339	221
339-346	264
346-352	332
352-355	407

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
355-360	457
360-362	457
362-366	269
366-372	232
372-377	187
377-383	232
383-388	307
388-394	632
394-398	832
398-400	457
Mile 624	
26 December 1958	
2- 13	3
13- 27	16
27- 33	27
33- 39	32
39- 43	77
43- 46	52
46- 50	39
50- 53	42
53- 57	24
57- 60	52
60- 64	17
64- 70	32
70- 78	32
78- 85	55
85- 86	303
86- 88	153
88- 97	69
97-101	103
101-104	69
104-111	61
111-115	78
115-118	85
118-128	65
128-139	185
139-142	125
142-147	114
147-152	35
152-162	42
162-167	60
167-169	95
169-176	45
176-180	73
180-183	186
183-186	118
186-189	186
189-192	186
192-196	96
196-203	46
203-210	58
210-216	96
216-223	198
223-232	156
232-235	156
235-245	96
245-250	115
250-257	198
257-262	186
262-266	231
266-267	544
267-270	276
270-275	313
275-281	232
281-286	217
286-293	177
293-300	264
300-306	382
306-310	419
310-314	495
314-317	407
317-321	195
321-324	257
324-326	457
326-328	457
328-334	207
334-340	232
340-346	207
346-349	757
349-353	345
353-356	407
356-360	457
360-366	357
366-369	457
369-371	682
371-381	307
381-386	277
386-389	257
389-391	532
391-395	345
395-398	557
398-400	457
Mile 630	
26 December 1958	
3- 12	13
12- 18	22
18- 22	27
22- 30	17
30- 35	62
35- 38	62
38- 46	96
46- 48	177
48- 52	127
52- 59	362
59- 65	61
65- 70	52
70- 77	37
77- 84	23
84- 89	53
89- 98	69
98-106	72
106-122	18
122-126	128
126-130	91
130-135	73
135-142	88
142-149	66
149-154	63
154-160	89
160-164	65
164-169	93
169-174	103
174-177	153
177-182	126
182-186	156
186-190	118
190-197	71
197-206	36
206-212	81
212-216	165
216-220	118
220-225	115
225-229	118
229-232	246
232-241	76
241-246	115
246-252	96
252-256	231

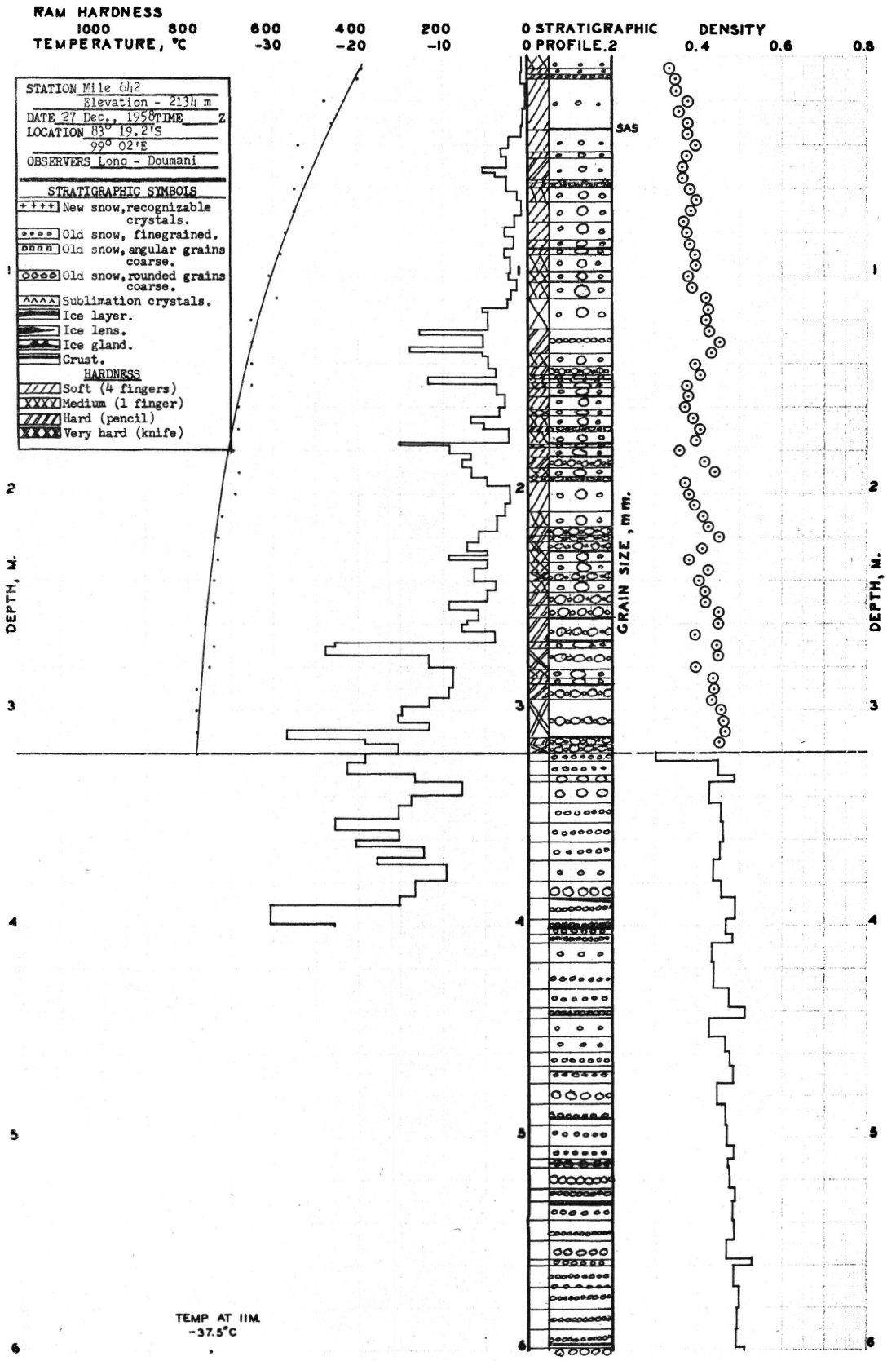
RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
256-259	186
259-264	186
264-268	165
268-273	456
273-275	231
275-278	216
278-284	156
284-289	277
289-292	532
292-300	382
300-304	345
304-310	232
310-315	337
315-320	187
320-324	457
324-328	232
328-332	269
332-338	257
338-350	232
350-358	137
358-362	269
362-367	307
367-374	282
374-384	142
384-390	207
390-394	382
394-400	332

Mile 636
26 December 1958

Depth cm	Hardness Number, Kg
1- 9	9
9- 16	12
16- 23	23
23- 28	20
28- 33	44
33- 39	47
39- 42	32
42- 46	39
46- 52	57
52- 57	212
57- 60	182
60- 65	62
65- 67	127
67- 72	88
72- 77	52
77- 84	15
84- 91	26
91- 98	47
98-104	55
104-111	69
111-115	117
115-119	50
119-123	27
123-127	27
127-134	70
134-140	110
140-145	148
145-149	95
149-156	95
156-163	95
163-167	140
167-172	60
172-180	40
180-184	73
184-189	115
189-196	71
196-202	111
202-209	96
209-213	96
213-220	46
220-228	51
228-235	71
235-239	96
239-247	96
247-254	135
254-258	118
258-262	141
262-268	81
268-272	118
272-278	156
278-281	187
281-287	203
287-292	222
292-298	157
298-302	232
302-309	161
309-316	265
316-322	257
322-327	247
327-330	257
330-333	357
333-336	257
336-339	257
339-343	457
343-348	187
348-352	195
352-356	307
356-362	182
362-369	199
369-371	607
371-378	115
378-386	176
386-390	269
390-397	264
397-400	507


RAM HARDNESS
1000 800
TEMPERATURE, °C
600 400 200
-30 -20 -10
0 STRATIGRAPHIC
0 PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION Mile 642
Elevation - 2134 m
DATE 27 Dec., 1958 TIME Z
LOCATION 83° 19.2'S
99° 02'E
OBSERVERS Long - Doumani
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS
GRAIN SIZE, mm.
DEPTH, M.
TEMP AT 11M.
-37.5°C

IGY Byrd Traverse 1958-59

Station Mile 642

Date 27 December 1958

Observers Long, Doumani

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 5	M	< .5	
5- 8	S	< .5	
8- 10	H	<1.0	
10- 33	S	.5-1.0	Drip crystals; 33 cm is sastrugi surface
33- 43	S	.5-1.0	Drip crystals; more compact than 10-33
43- 46	S	.5-1.0	Drip crystals; about as soft as 10-33
46- 56	H	.5-1.0	
56- 57	VS	2.0-6.0	Sublimation layer with cup-shaped crystals; loose
57- 59	H	.5-1.5	Drip crystals
56- 66	M	1.0-1.5	Drip crystals
66- 75	S	1.0-2.0	
75- 83	S	1.0-2.0	Softer than above layer
83- 87	S	1.0-1.5	More like 66-75
87			Crust, granular
87- 90	S	1.0-2.0	Softer than layer above
90- 98	M	1.0-1.5	
98			Granular crust
98-102	M	1.0-2.0	Drip crystals
102			Crust, thin
102-110	M	1.0-3.0	Drip crystals
110-124	M	1.0-2.0	Slightly more firm than layer above
124-135	H	1.0	
135-141	M	1.0-2.0	
141-145	H	1.0-1.5	
145-147	M	1.0-2.0	Drip crystals
147			Crust
147-149	S	1.0-3.0	Drip crystals
149-151	M	1.0-2.0	
151-155	S	1.0-2.0	Drip crystals
155			Granular crust
155-161	S	1.0-2.0	Drip crystals
161-164	M	1.0-2.5	Drip crystals
164-169	M	1.0-2.0	Drip crystals
169-171	H	1.0-1.5	
171-177	M	1.0-1.5	
177			Thin crust
177-178	M	1.0-1.5	
178-183	S	1.0-3.0	Drip crystals
183			Granular crust
183-188	H	1.0-1.5	
188-192	M	1.0-2.0	
192-194	VH	.5-1.0	
194-208	S	1.0-2.0	Drip crystals

Depth cm	Hardness	Grain Size, mm	Remarks
208-215	M	1.0-2.0	
215-219	H	1.0-2.0	Drip crystals
219-222	H	1.0-1.5	Drip crystals
222-226	VH	.5-1.5	
226			Thin crust
226-231	M	1.0-2.0	Drip crystals
231-236	M	1.0-3.0	Drip crystals
236-240	VH	.5-1.5	
240-245	M	1.0-2.5	Drip crystals
245-251	H	1.0-2.0	
251-257	H	1.0-3.0	
257			Thin crust
257-268	H	1.0-1.5	Harder than layer above; thin crust in layer
268-271	S	1.0-4.0	Drip crystals
271-281	VH	1.0-2.0	
281-285	M	1.0-3.0	
285-288	S	1.0-2.0	
288			Crust
288-295	H	1.0-2.0	
295-313	VH	1.0-1.5	
313			Thin crust
313-316	H	1.0-1.5	
316-320	VH	1.0-1.5	

IGY Byrd Traverse 1958-59

Station Mile 642

Date 27 December 1958

Observers Long, Toumani

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
320-323	.301	M	S	
323-330	.448	M	S	
330-333	.487	L	M	
333-343	.429	L	M	
343-352	.454	M	S	
352-361	.460	M	S	
361-369	.452	M	S	
369-379	.439	L	S	Break at 2 cm
379-387	.455	M	M	
387-397	.489	D	S	#1 crust at 0 to 1 cm
397-404	.469			0-5.2 D and S; 5.2-6.8 M and S; #2 crust at 5.2 cm
404-408	.482	D	S	
408-417	.433	L	S	
417-429	.439	M	S	
429-438	.475	M	S	
438-443	.512	D	S	#3 crust at 4.5 cm
443-452	.427	L	S	Break at 7 cm
452-459	.465	L	S	
459-466	.478	M	S	
466-474	.483	M	S	#1 crust at 3.1 cm
474-484	.448	M	M	
484-494	.465	M	S	#2 crust at 7.0 cm
494-504	.468	M	S	
504-510	.486	M	S	
510-514	.471	M	M	#1 crust at 3.0 cm
514-524	.472	D	M	
524-530	.489	D	S	
530-539	.484	M	S	#2 crust at 1.0 cm
539-548	.485	D	S	
548-557	.468	M	M	Break at 5.5 cm
557-560	.527	M	S	
560-570	.486	D	S	0-1.5 M and M grain; 9-10 M and S grain
570-580	.499	D	S	
580-590	.497	D	S	
590-599	.490	D	S	#1 crust at 8.0 to 8.8 cm
599-605	.501	M	M	
605-615	.488	D	M	
615-625	.491	D	S	
625-635	.512	D	S	#2 crust at 8 cm
635-637	.521	M	S	
637-647	.502	M	S	
647-655	.521	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
655- 665	.518	D	S	#2 crust at 0 to 1.0 cm
665- 676	.486	M	M	
676- 685	.516	D	M	
685- 693	.507	D	M	
693- 700	.530	D	S	
700- 710	.529	D	S	
710- 720	.495	D	M	
720- 730	.508	M	M	
730- 736	.531	D	S	
736- 740	.496	M	M	#1 crust at 0.1 cm
740- 743	.508	M	S	
743- 751	.544			0-3 D and S; 3-8.1 M and S
751- 756	.500	M	S	
756- 763	.522	D	M	Crust at 6.1
763- 773	.531	D	S	
773- 782	.545	D	S	
782- 787	.538	M	S	
787- 794	.529	D	M	#1 crust at 2 cm
794- 800	.534	D	M	#1 crust at 3 cm
800- 802	.511	L	M	
802- 812	.525	D	M	
812- 822	.540	D	S	
822- 828	.561	D	S	
828- 839	.524	M	M	Break at 5 cm
839- 846	.534	M	M	
846- 855	.536	D	S	
855- 862	.530	M	M	
862- 872	.524	D	M	
872- 882	.540	D	S	Double #1 crust at 8.1 to 8.9
882- 888	.542	D	S	
888- 895	.553	D	S	0-1.5 dense and medium grained
895- 905	.534	D	M	
905- 910	.555	D	M	#1 crust at 4.0 to 4.6 cm
910- 920	.526	D	M	
920- 929	.528	D	S	
929- 937	.523	M	M	Break at 4 cm
937- 947	.536	D	S	
947- 954	.556	D	S	
954- 959	.560	D	S	#1 crust at 3.5 cm
959- 969	.531	D	M	
969- 977	.550	D	S	
977- 986	.550	D	S	
986- 994	.546	D	M	#1 crust at 4.1 to 4.8 cm
994-1001	.553	D	S	
1001-1005	.537	D	M	
1005-1015	.541	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
1015-1021	.565	D	M	
1021-1029	.552	D	S	
1029-1039	.548	D	M	
1039-1047	.557	D	M	
1047-1056	.558	D	M	
1056-1062	.570	D	S	#2 crust at 2.0 cm
1062-1067	.542	M	M	
1067-1076	.554	D	M	
1076-1081	.556	D	M	
1081-1092	.546	D	S	

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
Mile 648	
28 December 1958	
1- 9	13
9- 13	65
13- 16	42
16- 24	39
24- 31	47
31- 34	62
34- 37	32
37- 44	23
44- 48	24
48- 49	62
49- 53	160
53- 56	32
56- 66	28
66- 73	27
73- 76	62
76- 80	78
80- 85	83
85- 91	103
91- 94	85
94- 98	78
98-106	28
106-111	43
111-117	69
117-121	78
121-123	153
123-125	103
125-129	91
129-133	65
133-135	320
135-138	905
138-140	140
140-143	730
143-147	343
147-151	55
151-154	55
154-160	50
160-163	95
163-166	185
166-173	120
173-177	254
177-180	96
180-188	64
188-191	66
191-199	41
199-205	36
205-210	96
210-215	115
215-218	126
218-224	81
224-230	66
230-236	81
236-238	186
238-249	168
249-254	96
254-257	126
257-264	84
264-267	71
267-271	141
271-277	113
277-284	136
284-291	264
291-295	321
295-299	165
299-305	203
305-310	116
310-315	133
315-321	172
321-325	142
325-330	187
330-333	157
333-336	187
336-344	132
344-349	169
349-354	223
354-358	187
358-361	187
361-365	232
365-368	307
368-373	247
373-378	187
378-383	187
383-388	217
388-393	277
393-400	327
Mile 654	
28 December 1958	
0- 6	43
6- 13	87
13- 18	44
18- 24	32
24- 28	32
28- 36	24
36- 39	32
39- 45	52
45- 49	77
49- 53	92
53- 56	32
56- 62	22
62- 64	32
64- 68	98
68- 72	39
72- 80	32
80- 85	38
85- 90	45
90- 97	24
97-100	43
100-104	40
104-108	70
108-112	91
112-117	253
117-120	133
120-125	63
125-131	45
131-138	74
138-145	74
145-149	78
149-153	78
153-160	57
160-164	95
164-172	55
172-178	50
178-182	50
182-186	66
186-189	126
189-193	118
193-199	181
199-206	84
206-209	96
209-213	51
213-219	81
219-223	74
223-238	24
238-241	126
241-246	186
246-250	254
250-254	96
254-258	118
258-264	79

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
264-268	141
268-272	96
272-275	216
275-280	221
280-289	257
289-294	187
294-299	222
299-305	187
305-309	166
309-315	337
315-320	427
320-326	281
326-330	231
330-336	307
336-340	231
340-345	217
345-351	157
351-356	187
356-363	349
363-367	419
367-372	382
372-378	457
378-380	382
380-389	207
389-397	287
397-400	407

Mile 660
28 December 1958

Depth cm	Hardness Number, Kg
1- 7	25
7- 10	49
10- 14	22
14- 20	19
20- 24	27
24- 29	29
29- 31	37
31- 35	25
35- 38	22
38- 42	17
42- 46	17
46- 51	18
51- 55	27
55- 60	20
60- 66	22
66- 73	19
73- 77	39
77- 83	26
83- 88	63
88- 92	70
92- 98	127
98-102	115
102-107	63
107-115	53
115-118	85
118-123	93
123-127	78
127-133	53
133-141	53
141-145	53
145-155	43
155-158	69
158-164	53
164-169	53
169-174	63
174-178	91
178-183	43
183-189	45
189-195	63
195-200	94
200-206	95
206-210	154
210-216	111
216-220	81
220-224	186
224-228	74
228-233	79
233-239	111
239-244	132
244-246	231
246-251	115
251-255	141
255-259	141
259-263	321
263-267	321
267-274	121
274-278	118
278-281	186
281-287	307
287-290	457
290-293	427
293-297	127
297-300	217
300-303	367
303-306	157
306-311	133
311-315	277
315-320	259
320-325	367
325-330	367
330-333	307
333-335	532
335-338	657
338-341	257
341-347	157
347-353	257
353-358	277
358-363	367
363-365	532
365-373	269
373-379	232
379-387	194
387-396	289
396-400	232

Mile 666
26 December 1958

Depth cm	Hardness Number, Kg
1- 4	12
4- 11	5
11- 15	12
15- 21	15
21- 31	17
31- 37	43
37- 43	35
43- 49	26
49- 54	37
54- 57	42
57- 62	20
62- 68	26
68- 77	25
77- 83	32
83- 92	43
92- 97	63
97-101	48
101-107	93
107-112	45
112-116	70
116-121	75
121-129	65
129-134	73
134-138	78
138-144	62

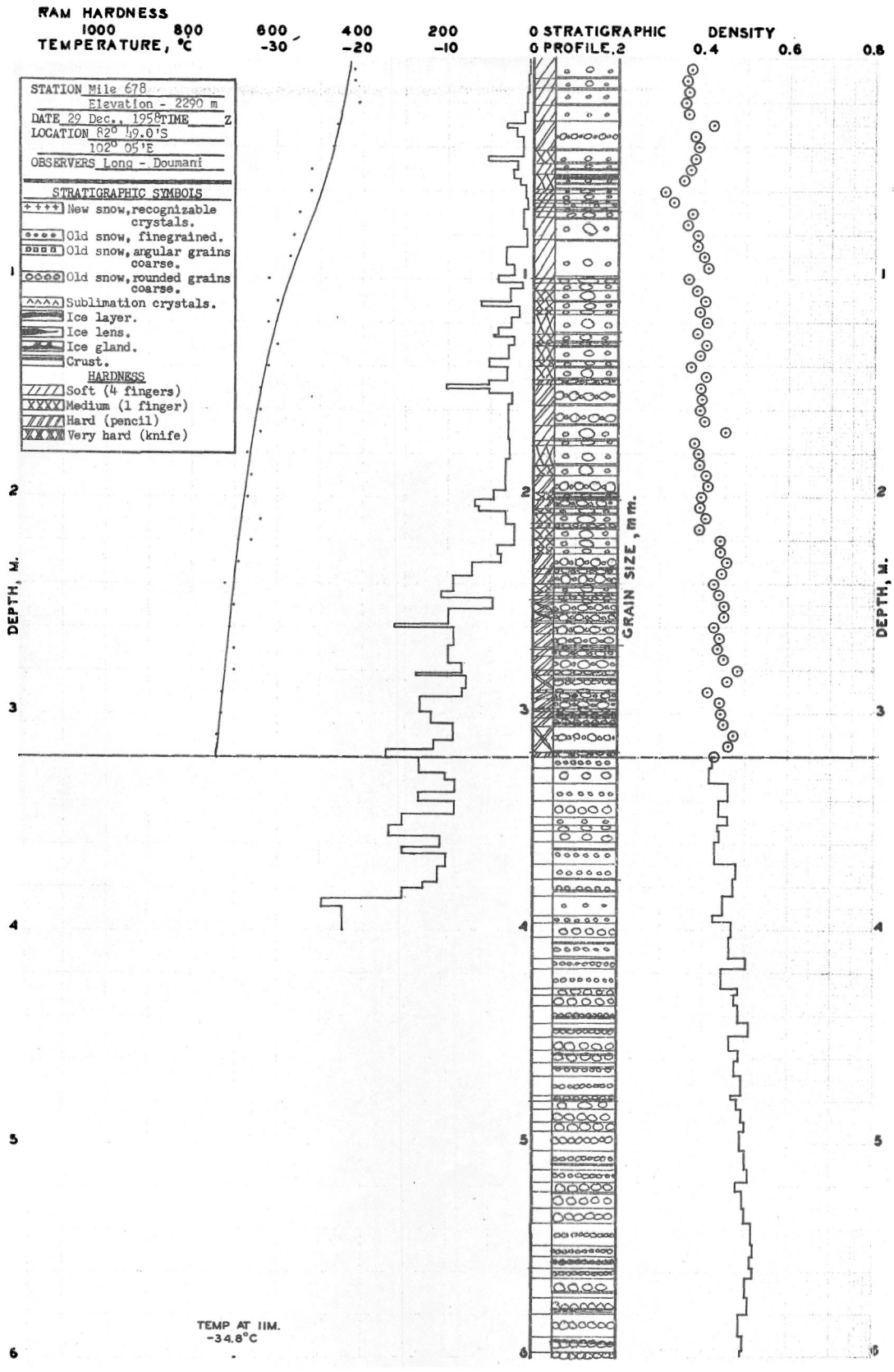
RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
144-149	83
149-150	303
150-154	378
154-157	353
157-160	103
160-162	128
162-169	74
169-172	85
172-176	123
176-184	81
184-189	156
189-195	96
195-199	118
199-203	96
203-209	121
209-215	51
215-220	43
220-224	74
224-227	126
227-235	41
235-241	81
241-249	74
249-254	115
254-261	96
261-267	126
267-270	156
270-273	156
273-280	264
280-284	210
284-289	115
289-293	186
293-299	261
299-308	246
308-312	344
312-316	231
316-321	246
321-325	194
325-331	181
331-334	257
334-341	327
341-348	327
348-350	532
350-355	337
355-358	507
358-362	569
362-367	247
367-372	217
372-379	263
379-383	307
383-387	307
387-392	217
392-400	253

Mile 672
28 December 1958

Depth cm	Hardness Number, Kg
1- 10	30
10- 15	62
15- 19	47
19- 21	77
21- 26	44
26- 31	44
31- 38	45
38- 42	77
42- 46	90
46- 54	33
54- 56	77
56- 59	84
59- 65	27
65- 76	28
76- 84	27
84- 95	25
95-100	43
100-106	86
106-111	93
111-114	53
114-125	58
125-130	83
130-136	69
136-141	93
141-148	135
148-154	275
154-156	185
156-160	50
160-166	50
166-172	95
172-178	50
178-182	50
182-190	41
190-197	31
197-201	51
201-209	51
209-213	74
213-217	74
217-224	84
224-231	58
231-236	79
236-241	79
241-245	118
245-252	71
252-254	51
254-260	156
260-266	141
266-271	150
271-276	118
276-280	141
280-285	187
285-288	427
288-291	257
291-297	207
297-301	195
301-307	257
307-312	217
312-321	107
321-325	382
325-329	269
329-334	247
334-339	217
339-341	382
341-348	413
348-350	607
350-356	182
356-363	177
363-368	247
368-374	432
374-378	195
378-384	257
384-390	232
390-400	307


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 678
Elevation - 2290 m
DATE 29 Dec., 1958 TIME Z
LOCATION 82° 49.0'S
102° 05'E
OBSERVERS Long - Doumani
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 11M.
-34.8°C

IGY Byrd Traverse 1958-59

Station Mile 678

Date 29 December 1958

Observers Long, Doumani

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 9	S	.5-1.0	Fine grained recently deposited snow
9			Crust
9- 13	S	.5-1.0	Similar snow as 0-9 but slightly more compact
13			Crust
13- 21	S	<1.0	Same as 9-13
21			Crust
21- 28	S	<1.0	Same appearance as above layers
28			Sastrugi surface
28- 32	H	.5-1.0	
32- 41	M	.5-1.0	
42			Crust
41- 47	M	<1.0	Very similar to layer above
47			Crust
50			Crust
47- 52	S	.5-1.0	
52, 53, 54, 56, 58			(Crusts
52- 59	M	.5-1.0	
59- 61	S	1.0-2.5	Loose layer--drip crystals
61- 64	S	.5-1.5	Not as loose as above and below
64- 65	S	1.0-3.0	Loose--drip crystals
65- 67	S	1.0-1.5	More compact than three layers above--drip crystals
67- 69	S	1.0-2.0	Drip crystals; softer than 65-67
69			Crust
69- 72	S	1.0-2.0	Drip crystals, similar to 65-67
72			Crust
72- 82	S	1.0-3.0	Drip crystals, softer than 69-72
82			Crust
82-100	S	1.0-1.5	More firm than above layer
99			Crust
100-102	S	2.0-5.0	Drip crystals, especially loose horizon
102-105	S	1.0-2.0	Drip crystals
105-110	M	1.0-3.0	Drip crystals
111			Crust
110-114	M	1.0-2.0	Similar to layer above but larger crystals
114-116	M	1.0-3.0	Drip crystals; softer than 110-114
116-125	M	1.0-2.0	Drip crystals; slightly harder than layer above
125			Crust
125-129	M	1.0-2.0	Drip crystals
129			Crust
129-130	M	1.0-2.0	Similar hardness as in layer above

Depth cm	Hard-ness	Grain Size, mm	Remarks
130			Crust
130-137	M	1.0-1.5	Slightly more dense than 129-130
137-140	M	1.0-2.0	Drip crystals; softer than 130-137
140			Crust
140-146	M	1.0-2.0	Softer than above layer
146-148	H	.5-1.5	
148-158	H	1.0-2.0	Drip crystals
159			Crust
158-167	H	1.0-2.0	Drip crystals; all hardness from 146 to 167 about the same
167			Crust
167-174	S	1.0-3.0	Drip crystals
175			Crust
174-176	S	1.0-4.0	Drip crystals; loose layer
176			Crust
176-185	M	1.0-2.0	
185			Crust
185-190	M	1.0-3.0	Drip crystals; hardness same as layer above
190-198	H	1.0-2.0	
198			Crust
198-201	M	1.0-2.0	Drip crystals; loose layer
200,201			Crusts
201-205	H	1.0-2.0	Drip crystals
205			Crusts
205-207	M	1.0-3.0	Drip crystals
207			Crust
207-212	M	1.0-3.0	Drip crystals; softer than layer above
212-214	H	1.0-2.0	
214			Crust
214-219	M	1.0-3.0	Drip crystals
219-223	M	1.0-3.0	Softer than above layer
223-226	M	1.0-2.0	Slightly more firm than above layer
226-233	H	1.0-2.0	
233			Crust
233-235	H	1.0-2.0	Drip crystals
235-240	H	1.0-2.0	226 to 240 nearly same hardness
241			Crust
240-244	M	1.0-2.0	
244-245	S	1.0-4.0	Drip crystals
245-247	VH	.5-1.5	
247-248	S	1.0-2.0	Drip crystals
248-253	VH	.5-1.5	
253			Crust
253-257	VH	1.0-1.5	Very close to same hardness as 248-253
257-258	M	1.0-3.0	Drip crystals; loose layer
258-263	H	1.0-2.0	Drip crystals

Depth cm	Hardness	Grain Size, mm	Remarks
263-269	H	1.0-1.5	Slightly harder than above layer
268			Crust
269-270	M	1.0-2.0	Drip crystals
270			Crust
270-273	H	1.0-1.5	
273			Crust
273-280	H	1.0-2.0	A bit harder than layer above
280-282	H	1.0-2.5	Drip crystals; less hard than 273-280
283			Crust
283-289	VH	.5-1.0	
289-290	S	1.0-4.0	Drip crystals; loose layer
290-293	H	1.0-2.0	Drip crystals
293			Crust
293-298	H	1.0-1.5	Similar hardness to layer above
298-299	M	1.0-3.0	Drip crystals
299-302	H	1.0-2.0	
301			Crust
302-306	H	1.0-2.0	Drip crystals; same hardness as 299-302
305			Crust
306-318	VH	1.0-1.5	
318			Crust
318-320	H	1.0-3.0	Drip crystals

IGY Byrd Traverse 1958-59

Station Mile 678

Date 29 December 1958

Observers Long, Doumani

CORE STRATIGRAPHY

Depth cm	Density	Pack-ing	Grain Size	Remarks
320-325	.422	M	S	
325-332	.419	L	M	
332-340	.460	M	S	
340-347	.439	M	M	#2 crust at 2.5 cm; break at 3 cm
347-351	.458	M	M	
351-354	.434	L	S	
354-359	.437	L	M	Break at 3 cm
359-369	.429	L	M	
369-376	.478	M	S	
376-384	.471	M	S	#1 crust at .5 to 1.9 cm; #1 crust at 7.9 cm
384-393	.449	L	S	Break at 3.0 cm
393-396	.426	L	M	
396-403	.469	M	M	
403-413	.463	M	S	#3 crust at 2.5 cm; #2 crust at 9.0 cm
413-418	.501	D	S	
418-427	.446	M	S	
427-430	.485	M	M	
430-435	.478	M	M	
435-443	.485	D	S	#1 crust at 6.0 to 6.8 cm
443-449	.510	D	S	#2 crust at 5.7 to 6.2 cm
449-456	.464	M	M	
456-461	.487	M	M	#1 crust at 2.5 to 3.9 cm
461-468	.478	M	S	#3 crust at 7.0 cm
468-477	.492	D	S	
477-479	.470	M	S	
479-484	.481	L	M	Break at 2 cm; #1 crust 0 to 0.5 cm
484-490	.491	M	M	
490-494	.500	M	M	
494-503	.490	D	M	
503-512	.502	D	S	#2 crust at 7.8 cm
512-518	.507	D	S	
518-522	.480	M	M	
522-530	.496	M	M	#1 crust at 0 to 0.4 cm
530-537	.498	D	M	
537-547	.516	D	S	Break at 5 cm
547-553	.518	D	S	
553-558	.514	D	S	#2 crust at 2.4 cm
558-563	.518	D	S	
563-572	.501	M	M	#1 crust at 7.7 cm
572-580	.509	D	M	#3 crust at 6.6; #1 crust at 7.9 cm
580-590	.488	D	M	Break at 8.5
590-597	.495	D	M	Double #1 crust at 2.5 to 3.5 cm
597-601	.492	D	M	

IGY Byrd Traverse 1958-59

Station Mile 678
(Continued)

Depth cm	Density	Packing	Grain Size	Remarks
601-605	.523	D	S	
605-610	.500	D	M	
610-621	.533	D	S	
621-626	.513	M	S	#1 crust at 0 to 0.6 cm
626-632	.518	D	S	
632-637	.517	D	M	
637-645	.508	M	M	Break at 6 cm
645-652	.517	M	S	#2 crust at 6 cm
652-657	.513			0-1 M and M grained; 1-3.5 D and S grain; 3.5-5.2 D and M grain; #1 crust at 3.3 to 4.0
657-663	.553	D	S	
663-669	.521	D	M	#2 crust at 2.6 cm
669-674	.502	M	M	
674-685	.520	D	M	Double #1 crust at 10.0 to 10.5 cm
685-688	.508	M	M	
688-692	.507	D	M	Break at 2 cm
692-696	.522	M	S	
696-706	.526	D	M	
706-716	.524	D	S	
716-721	.520	D	M	#1 crust at 4.3 to 5.0 cm
721-728	.538	D	S	
728-733	.514	D	M	#3 crust at 4.5 cm
733-741	.523	M	M	
741-754	.526	D	M	
754-757	.525	D	M	
757-767	.532	D	M	
767-777	.520	D	M	#3 crust at 1-1.5 cm
777-785	.518	M	M	Double #1 crust at 1.4 to 1.8 cm
785-788	.520	M	M	
788-798	.532	D	M	
798-803	.557	D	M	#1 crust at 5 to 5.3 cm
803-813	.547	D	S	
813-822	.535	M	M	#3 crust at 1.0 cm; #2 crust at 7.9-8.2 cm; break at 3.8 cm
822-830	.529	M	M	
830-835	.538	D	M	#3 crust at 0.7; #2 crust at 3.1 cm
835-847	.548	D	M	#2 crust at 0 to 0.5 cm
847-853	.550	D	M	#2 crust at 0 to 0.5 cm
853-857	.565	D	S	#3 crust at 2.2; #1 crust at 2.8 to 3.7
857-861	.573	D	S	
861-867	.542	D	M	
867-874	.550	M	M	#3 crust at 6.1
874-883	.557	D	M	Break at 7 cm
883-887	.552	M	M	#1 crust at 2 cm
887-894	.559	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
894- 896	.565	M	M	#1 crust at 0.1 cm
896- 904	.556	D	S	#1 crust at 7 cm
904- 914	.539	D	M	
914- 918	.570	D	S	
918- 920	.565	D	M	
920- 930	.554	D	M	
930- 934	.561	D	M	
934- 943	.554	D	S	
943- 948	.553	D	M	#2 crust at 0 to 0.5 cm
948- 955	.559	D	M	
955- 959	.565	D	S	#3 crust at 1.4; #1 crust at 2.8
959- 966	.558	D	S	
966- 970	.578	D	S	
970- 973	.536	M	M	
973- 975	.588	D	M	
975- 981	.567	D	S	#1 crust at 5.2-5.6 cm
981- 991	.547	D	M	#3 crust at 2.0 cm
991-1000	.570	D	S	Double #1 crust at 8.7 cm
1000-1005	.578	D	M	
1005-1010	.549	M	M	
1010-1017	.572	D	S	#1 crust at 0.2; #3 crust at 6.4; 5.8-6.8 D and M
1017-1026	.552	D	M	#1 crust at 3.2; #2 crust at 8.5
1026-1034	.568	D	S	#2 crust at 2.7; #3 crust at 7.1
1034-1043	.565	M	M	Break at 2.7; #2 crust at 2.9
1043-1046	.568	D	M	#1 crust at 0.5 to 0.7; #2 crust at 1.0 to 1.4
1046-1055	.574	D	M	#2 crust at 1.7 to 2.0 cm
1055-1062	.576	D	M	
1062-1065	.565	D	M	#3 crust at 1.6 to 2.6 cm
1065-1069	.594	D	M	
1069-1080	.568	D	M	
1080-1085	.563	D	M	#1 crust at 0.4 to 1.1; #2 crust at 2.9 to 3.4; break at 3.5

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
Mile 684	
30 December 1958	
1- 5	10
5- 16	9
16- 19	42
19- 21	77
21- 25	32
25- 29	24
29- 31	62
31- 37	22
37- 45	96
45- 47	122
47- 50	42
50- 56	22
56- 61	37
61- 67	26
67- 71	39
71- 75	47
75- 80	33
80- 84	70
84- 87	23
87- 95	37
95- 99	93
99-106	37
106-109	33
109-112	73
112-118	212
118-122	191
122-128	45
128-131	69
131-140	47
140-146	78
146-153	74
153-156	53
156-162	53
162-166	91
166-171	83
171-178	61
178-181	152
181-186	186
186-190	74
190-196	66
196-203	136
203-206	186
206-214	175
214-219	96
219-222	126
222-230	175
230-234	276
234-240	186
240-243	186
243-246	156
246-248	186
248-251	246
251-255	165
255-260	223
260-264	231
264-267	306
267-275	212
275-282	225
282-287	277
287-293	202
293-303	187
303-310	457
310-315	169
315-321	382
321-324	177
324-326	607
326-331	487
331-335	382
335-338	307
338-341	357
341-346	247
346-349	507
349-354	307
354-358	307
358-362	382
362-366	457
366-371	457
371-374	357
374-379	397
379-386	327
386-393	327
393-397	382
397-398	987±
398-400	607
Mile 690	
30 December 1958	
1- 6	20
6- 11	10
11- 13	17
13- 15	52
15- 19	24
19- 25	32
25- 31	17
31- 37	22
37- 41	47
41- 46	20
46- 51	32
51- 62	22
62- 69	44
69- 76	40
76- 82	53
82- 88	63
88- 97	43
97-102	70
102-109	54
109-111	93
111-118	87
118-123	103
123-127	153
127-131	91
131-136	63
136-140	91
140-146	115
146-149	183
149-153	128
153-159	105
159-165	105
165-171	95
171-178	108
178-183	96
183-190	135
190-194	231
194-197	426
197-202	276
202-205	186
205-210	186
210-212	231
212-220	186
220-224	276
224-230	291
230-236	306
236-240	254
240-243	186
243-249	231
249-252	216
252-258	111
258-260	321
260-264	321

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
264-269	306
269-275	306
275-280	276
280-286	432
286-290	269
290-293	357
293-295	532
295-298	307
298-300	532
300-305	367
305-308	457
308-312	495
312-318	507
318-324	632
324-330	632
330-332	457
332-334	532
334-339	757
339-342	1000
342-344	757
344-346	457
346-349	557
349-353	269
353-355	457
355-360	517
360-363	407
363-368	307
368-373	337
373-377	569
377-382	757
382-387	757
387-393	1000
393-399	1050
399-400	457

Mile 693
30 December 1958

Depth cm	Hardness Number, Kg
3- 11	16
11- 14	32
14- 20	14
20- 22	117
22- 25	32
25- 31	26
31- 35	114
35- 37	92
37- 44	40
44- 47	42
47- 52	44
52- 57	32
57- 62	56
62- 69	53
69- 73	64
73- 79	44
79- 82	68
82- 86	80
86- 89	69
89- 91	128
91- 99	53
99-106	53
106-111	83
111-119	128
119-121	128
121-124	53
124-129	53
129-137	65
137-141	128
141-144	215
144-151	57
151-159	63
159-162	65
162-167	60
167-174	57
174-180	230
180-183	216
183-188	186
188-192	96
192-197	79
197-200	186
200-203	186
203-208	132
208-211	216
211-217	216
217-221	118
221-229	86
229-232	246
232-238	141
238-245	135
245-249	118
249-255	186
255-258	306
258-265	326
265-269	231
269-275	171
275-280	115
280-285	186
285-289	367
289-293	457
293-297	299
297-301	232
301-303	277
303-310	264
310-316	407
316-318	382
318-323	367
323-327	232
327-333	207
333-336	207
336-339	307
339-345	232
345-351	257
351-356	187
356-361	157
361-364	257
364-367	507
367-369	532
369-373	457
373-378	457
378-382	495
382-386	307
386-389	457
389-395	607
395-400	697

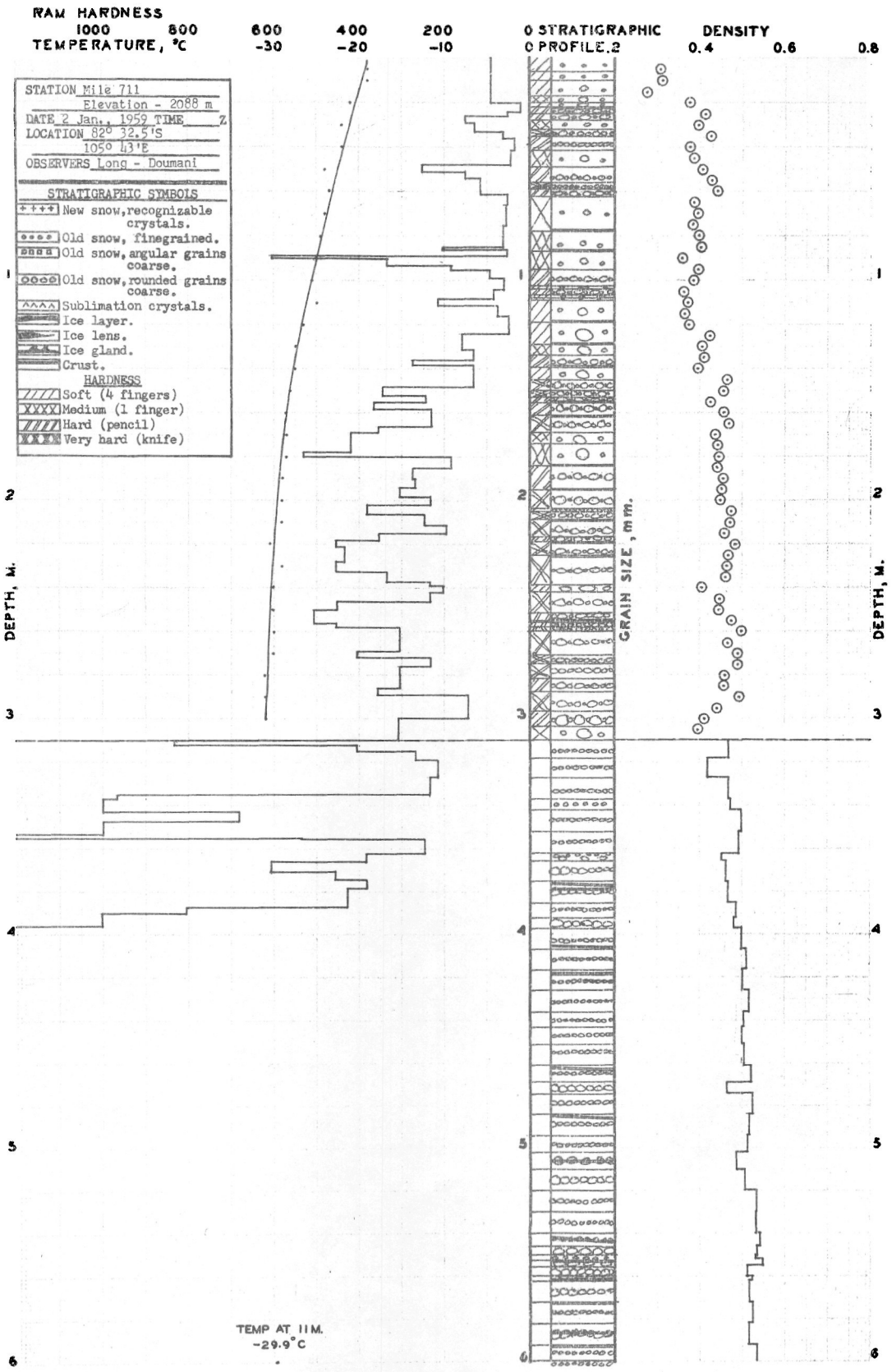
Mile 699
30 December 1958

Depth cm	Hardness Number, Kg
2- 9	19
9- 12	52
12- 17	128
17- 20	68
20- 27	44
27- 30	84
30- 46	77
46- 51	52
51- 56	42
56- 60	102
60- 66	44
66- 76	22
76- 79	328
79- 86	403
86- 91	274
91- 94	185

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
94- 98	140
98-102	140
102-110	40
110-115	78
115-121	50
121-126	237
126-129	275
129-134	149
134-138	117
138-140	185
140-147	83
147-150	155
150-155	114
155-158	125
158-164	95
164-168	140
168-174	80
174-185	205
185-193	197
193-201	291
201-205	141
205-211	156
211-215	321
215-219	681
219-225	431
225-230	306
230-235	246
235-241	181
241-248	391
248-259	681
259-261	681
261-265	306
265-271	506
271-279	544
279-284	656
284-293	697
293-303	757
303-308	1050
308-313	1000
313-315	1500
315-319	1250
319-321	3000
Mile 705	
31 December 1958	
1- 7	39
7- 11	15
11- 17	6
17- 21	17
21- 26	14
26- 32	19
32- 34	77
34- 35	602
35- 38	214
38- 40	252
40- 44	127
44- 48	102
48- 52	52
52- 60	40
60- 66	61
66- 70	52
70- 77	73
77- 83	86
83- 92	69
92- 94	228
94- 98	128
98-104	53
104-107	101
107-112	123
112-118	78
118-124	86
124-129	131
129-135	125
135-139	95
139-143	230
143-146	305
146-150	140
150-154	185
154-158	185
158-161	395
161-165	140
165-171	110
171-179	117
179-185	125
185-190	168
190-193	126
193-196	306
196-198	456
198-202	276
202-208	201
208-212	231
212-216	268
216-221	156
221-226	186
226-235	123
235-240	126
240-244	194
244-246	381
246-248	456
248-254	156
254-259	246
259-267	156
267-272	306
272-282	306
282-285	256
285-291	257
291-294	307
294-298	195
298-302	345
302-305	307
305-311	257
311-315	345
315-319	345
319-326	327
326-331	607
331-338	542
338-343	757
343-347	682
347-350	607
350-353	3000
353-353	Inf.


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC
0 PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 711
Elevation - 2088 m
DATE 2 Jan., 1959 TIME Z
LOCATION 82° 32.5'S
105° 43'E
OBSERVERS Long - Doumani
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 11M.
-29.9°C

IGY Byrd Traverse 1958-59

Station Mile 711

Date 2 January 1959

Observers Long, Doumani

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 6	VS	< .5	New snow
6- 10	S	<1.0	
10- 17	S	.5-1.0	Softer than layer above
17- 20	M	.5-1.0	Drip crystals
20- 22	S	.5-1.5	
22			Crust
22- 25	H	.5-1.0	
25- 28	H	.5-1.0	Softer than above layer
28- 32	M	.5-1.0	
32			Crust
32- 35	VH	<1.0	
35- 41	H	.5-1.0	
41- 49	M		Drip crystals
49- 56	H	.5-1.0	
56- 59	VH	<.5	
59- 62	H	.5-1.0	
62- 78	M	.5-1.0	
78			Thin crust
78- 87	M	.5-1.0	Slightly harder than 62-78
87			Thin crust
87- 95	M	.5-1.0	Softer than above layer
95-103	H	.5-1.0	
103-104	S	1.0-2.0	Small, obviously soft layer
104-107	H	.5-1.0	
107-108	S	1.0-3.0	Drip crystals; loose layer (result of sublimation?)
108-109	H	1.0-2.0	
109-119	S	1.0-2.0	Drip crystals; about as soft as above layer
119			Granular crust
119-129	S	1.0-3.0	Drip crystals
129			Granular crust
129-134	M	1.0-2.0	
134-139	H	.5-1.5	
139			Crust
139-145	S	1.0-2.0	Drip crystals
145-150	VH	.5-1.0	
150-153	VH	.5-1.0	Not as hard as layer above
153-155	H	1.0-2.0	Drip crystals
155			Crust
155-161	H	.5-1.5	Harder than layer above
161			Crust; sastrugi surface
161-169	VH	.5-1.0	

IGY Byrd Traverse 1958-59

Station Mile 711 (Continued)

Depth cm	Hardness	Grain Size, mm	Remarks
169-174	M	1.0-2.0	Drip crystals
174-184	M	1.0-2.0	About same hardness as above layer
184			Thin crust
184-195	H	1.0-1.5	
195			Crust
195-204	VH	1.0-2.0	
204-205	H	1.0-1.5	
205-209	VH	.5-1.0	
209-217	VH	.5-1.5	Not as hard as the above layer
217-219	H	1.0-1.5	
219			Crust
219-225	VH	.5-1.0	
225			Thin crust
225-239	VH	.5-1.0	Harder than layer above
239-242	VS	2.0-4.0	Drip crystals; loose, large crystals
242-252	VH	1.0-2.0	Not as hard as 225-239
252-255	H	1.0-1.5	
255			Crust
255-256	VH	.5-1.0	
256-258	H	1.0-2.0	Drip crystals
258-260	VH	.5-1.0	
260-271	VH	.5-1.5	Not as hard as layer above
271-275	VH	.5-1.0	Particularly hard, impenetrable layer
275-282	VH	.5-1.5	Not as hard as layer above
282-288	H	1.0-2.0	Drip crystals
288-297	VH	.5-1.5	
297-304	H	1.0-3.0	Drip crystals
304-310	M	1.0-2.0	

IGY Byrd Traverse 1958-59

Station Mile 711

Date 2 January 1959

Observers Long, Doumani

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
310-318	.469	D	S	
318-327	.419	D	S	Break at 6.5
327-337	.468	D	S	
337-342	.471	M	S	Break at 5.0
342-352	.499	D	S	
352-362	.491	D	S	
362-365	.452			0-2.4 M and S grain; 2.4-3.8 L and M grain; break at 2.5
365-375	.461	D	M	
375-385	.463	D	M	#1 crust at 0.7-1.5; #3 crust at 2.5 cm
385-392	.485	D	S	
392-397	.482	D	M	
397-407	.500	D	S	#1 crust at 9.6-10.4 cm
407-416	.512	D	S	
416-426	.502	D	S	#1 crust at 0.1
426-436	.517	D	S	
436-443	.503	D	S	Break at 4 cm
443-451	.501	D	S	
451-461	.502	D	S	
461-469	.521	D	S	#2 crust at 0.4 to 1.5 cm
469-474	.466	D	M	
474-484	.523	D	S	
484-494	.518	D	S	#3 crust at 0.2 to 1.2 cm
494-502	.514	D	S	
502-510	.488	M	M	Break at 2.8; #1 crust
510-520	.509	D	M	
520-530	.532	D	S	
530-540	.532	D	S	
540-546	.541	D	S	#3 crust at 2.5-3.6
546-550	.534	M	M	
550-552	.531	M	S	
552-555	.547	M	M	#2 crust at 0 to 0.5
555-560	.511	D	M	
560-562	.521	M	S	#1 crust at 1.7
562-572	.518	D	M	
572-582	.523	D	S	Double #1 crust at 0 to 0.7
582-592	.515	D	M	#2 crust at 4.5 cm
592-599	.536	D	S	#2 crust at 1.0 cm
599-604	.547	D	S	
604-608	.516	M	S	
608-613	.526	M	S	#1 crust at 0.6 to 1.4; #1 crust at 3.2 to 4.1
613-622	.542	D	M	

Depth cm	Density	Packing	Grain Size	Remarks
622-632	.527	D	S	#2 crust at 0.7 cm
632-640	.541	D	M	#1 crust at 0 to 0.8 cm
640-645	.547	M	S	
645-650	.554	D	S	#2 crust at 0.6 to 1.0; #2 crust at 5.0 cm
650-656	.555	D	S	#1 crust at 3.6
656-664	.565	D	S	
664-670	.552	D	S	#1 crust at 4.6 to 5.3
670-673	.541			0 to 1.3 M and very large grain; 1.3 to 2.8 dense and small grains
673-680	.532	D	S	#2 crust at 0.1; #2 crust at 0.7 cm
680-688	.548	D	S	#1 crust at 0 to 0.8; #1 crust at 6.5 to 7.4 cm
688-692	.537	D	M	
692-702	.546	D	M	
702-708	.559	D	S	#3 crust at 0.9; #2 crust at 2.5; #1 crust at 3.7 to 4.6; #1 crust at 5.4 to 6.1
708-716	.525	D	M	
716-718	.511	M	S	
718-726	.520	M	S	Zone of medium packing, medium grain 6.8 to 7.7 cm
726-736	.546	D	M	#3 crust at 1.3
736-742	.555	D	M	#1 crust at 1.5
742-748	.542	D	S	#2 crust at 1.4 to 1.8; #1 crust at 4.4 to 5.0
748-757	.556	D	S	#3 crust at 6.4 to 7.7
757-765	.548	D	S	
765-770	.515			0-2 M and L grain; 2-4.5 dense and medium grain; #1 crust 4.5 to 5.0
770-780	.537	D	M	#2 crust at 1.3 to 2.3
780-788	.550	D	M	
788-797	.559	D	S	#1 crust at 1.6 to 2.1
797-807	.551	D	S	#1 crust at 0 to 0.4; #1 crust at 0.9 to 1.5 cm
807-816	.557	D	S	#2 crust at 1.5 to 2 cm; #2 crust at 3.4 to 4.0 cm; #2 crust at 8.0 cm
816-820	.546	D	S	
820-826	.536	D	S	
826-834	.558	M	S	
834-843	.561	D	M	#1 crust at 8.6 to 9.1 cm
843-853	.560	D	S	
853-859	.530	M	M	
859-866	.571	D	S	#2 crust at 0 to 0.4; #2 crust at 2.8 to 3.5; #1 crust at 6.2 to 7.2
866-876	.570	D	M	
876-882	.565	D	S	
882-888	.561	D	S	#1 crust at 4.1 to 4.8; below crust core is dense and medium grain

Depth cm	Density	Packing	Grain Size	Remarks
888- 891	.537	M	M	
891- 899	.572	D	S	#2 crust at 1.5 to 1.9 cm
899- 908	.540	M	M	
908- 918	.568	D	M	#3 crust at 2.0 cm
918- 930	.570	D	S	
930- 940	.581	D	M	
940- 945	.580	D	S	#1 crust at 5.3 to 5.8
945- 949	.568	D	M	#1 crust at 2.5 to 2.9
949- 958	.578	D	S	
958- 964	.573	M	S	Double #2 crust at 0.3 to 1.1; #1 crust at 1.8 to 2.6 cm
964- 968	.581	D	M	#1 crust at 2.6 to 3.0
968- 977	.561	D	M	
977- 981	.575	M	L	#2 crust at 0.1; #1 crust at 1.5 cm
981- 991	.576	D	M	
991- 996	.563	D	S	#3 crust at 2.6; #1 crust at 4.0 to 5.0 cm
996-1004	.559	D	L	
1004-1013	.571	D	M	Double #2 crust at 2.0-3.0; #2 crust at 6.5 to 7.6
1013-1023	.583	D	S	
1023-1027	.590	D	S	#2 crust at 0.6 to 1.4
1027-1032	.589	D	M	#2 crust at 2.1 to 2.7; #2 crust at 4.1 cm
1032-1034	.565	D	M	
1034-1048	.580	D	S	#3 crust at 0.3; #1 crust at 12.1 to 12.8
1048-1061	.574	D	S	#3 crust at 11.3 to 11.8
1061-1070	.588	D	M	#1 crust at 7.3 to 8.1
1070-1074	.586	D	M	
1074-1082	.586	D	S	Break at 5 cm

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
Mile 717	
3 January 1959	
1- 4	15
4- 7	42
7- 11	17
11- 15	32
15- 22	10
22- 28	20
28- 30	27
30- 32	47
32- 39	79
39- 41	27
41- 44	142
44- 46	777
46- 51	252
51- 55	312
55- 57	94
57- 61	72
61- 68	29
68- 76	39
76- 80	50
80- 84	95
84- 89	60
89- 92	65
92- 97	543
97-100	665
100-104	185
104-109	78
109-116	57
116-125	45
125-131	125
131-134	125
134-142	27
142-146	95
146-152	155
152-156	140
156-165	35
165-174	45
174-182	40
182-188	66
188-194	96
194-197	156
197-205	287
205-209	276
209-213	141
213-218	115
218-222	96
222-227	186
227-235	231
235-243	946
243-246	1000
246-251	756
251-259	476
259-263	381
263-268	546
268-279	606
279-283	269
283-289	257
289-296	542
296-302	632
302-308	632
308-314	557
314-318	457
318-324	382
324-327	307
327-330	507
330-334	419
334-337	507
337-342	667
342-346	232
346-348	532
348-355	542
355-358	507
358-362	345
362-368	282
368-372	757
372-378	507
378-382	457
382-387	907
387-389	232
389-392	457
392-397	427
397-400	557
Mile 724	
3 January 1959	
3- 10	9
10- 18	21
18- 23	22
23- 29	36
29- 31	92
31- 36	252
36- 38	127
38- 41	68
41- 48	31
48- 55	31
55- 61	52
61- 66	62
66- 69	84
69- 74	52
74- 77	52
77- 81	44
81- 87	27
87- 91	53
91- 96	43
96-102	133
102-106	78
106-109	133
109-113	103
113-120	88
120-122	228
122-125	330
125-128	155
128-133	60
133-139	65
139-144	60
144-150	50
150-160	23
160-168	27
168-172	27
172-176	164
176-181	60
181-189	49
189-193	386
193-197	109
197-201	94
201-206	94
206-211	113
211-216	150
216-224	231
224-228	434
228-233	168
233-236	126
236-240	118
240-245	186
245-249	141
249-255	96
255-259	231
259-263	268
263-267	381
267-272	756

RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
272-275	1000
275-280	1500
280-287	541
287-290	457
290-293	557
293-299	382
299-303	345
303-307	419
307-311	232
311-315	307
315-319	947
319-324	607
324-328	495
328-330	382
330-335	367
335-339	345
339-343	382
343-347	419
347-350	607
350-355	757
355-362	977
362-368	632
368-373	727
373-389	1500
389-394	757
394-400	807

Mile 729
3 January 1959

1- 3	32
3- 6	42
6- 15	8
15- 21	7
21- 26	37
26- 36	28
36- 38	182
38- 40	378
40- 43	252
43- 46	212
46- 49	82
49- 55	26
55- 62	32
62- 69	42
69- 71	62
71- 81	252
81- 85	567
85- 87	543
87- 90	125
90- 96	80
96-100	50
100-110	60
110-116	170
116-128	117
128-130	230
130-136	185
136-138	275
138-145	172
145-149	73
149-153	125
153-166	32
166-176	60
176-178	95
178-182	230
182-191	256
191-199	193
199-202	156
202-211	56
211-217	181
217-220	206
220-225	156
225-234	123
234-240	106
240-246	156
246-252	306
252-255	556
255-259	306
259-261	456
261-265	268
265-270	156
270-276	181
276-280	476
280-285	756
285-289	457
289-295	257
295-302	327
302-305	557
305-308	307
308-314	507
314-316	682
316-322	632
322-327	1500
327-335	947
335-340	757
340-344	569
344-350	632
350-355	757
355-358	907
358-365	432
365-373	1500
373-379	382
379-384	487
384-387	1000
387-388	5000

Mile 735
3 January 1959

3- 13	9
13- 15	10
15- 18	86
18- 22	39
22- 26	24
26- 31	26
31- 37	82
37- 40	52
40- 42	77
42- 47	37
47- 50	87
50- 51	307
51- 55	314
55- 62	152
62- 69	144
69- 76	248
76- 86	202
86- 90	320
90- 96	260
96-101	131
101-103	275
103-109	185
109-117	73
117-121	95
121-130	175
130-136	80
136-141	60
141-149	85
149-151	455
151-156	215
156-165	55
165-170	215
170-177	70
177-189	55
189-194	96

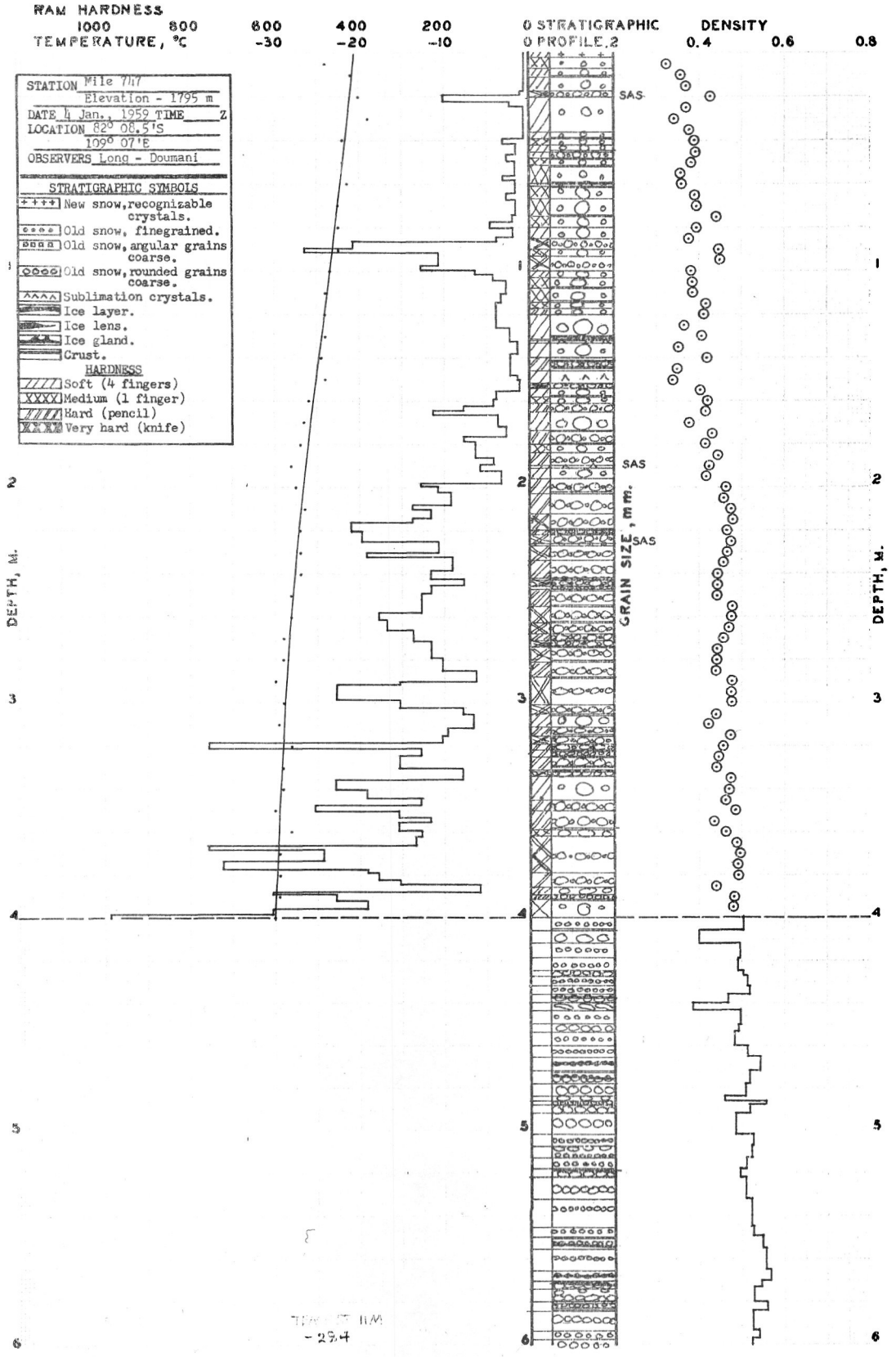
RAM HARDNESS DATA SHEET

Station IGY Byrd Traverse 1958-59
Observers Long, Doumani

Depth cm	Hardness Number, Kg
194-201	220
201-208	156
208-214	106
214-222	100
222-228	156
228-239	251
239-242	256
242-247	306
247-253	381
253-260	220
260-267	263
267-279	381
279-284	456
284-293	374
293-298	217
298-306	176
306-310	457
310-318	477
318-325	592
325-327	232
327-330	507
330-332	382
332-337	217
337-342	337
342-348	207
348-351	357
351-354	407
354-360	332
360-363	607
363-368	607
368-374	382
374-379	757
379-385	632
385-392	542
392-395	1500
395-400	1350

Mile 741
3 January 1959

Depth cm	Hardness Number, Kg
1- 8	23
8- 18	22
18- 23	30
23- 26	152
26- 27	302
27- 34	355
34- 41	302
41- 44	102
44- 50	44
50- 58	44
58- 65	60
65- 69	64
69- 75	85
75- 80	182
80- 82	103
82- 88	53
88- 90	228
90- 94	48
94- 99	23
99-108	133
108-117	133
117-120	185
120-124	95
124-127	95
127-134	325
134-138	567
138-141	505
141-147	80
147-150	55
150-154	117
154-156	305
156-162	80
162-166	155
166-178	217
178-190	317
190-194	231
194-200	181
200-204	81
204-209	66
209-215	206
215-221	206
221-229	56
229-235	131
235-240	246
240-247	114
247-251	154
251-258	134
258-260	231
260-268	81
268-275	114
275-279	231
279-284	366
284-292	427
292-298	407
298-303	367
303-308	367
308-312	382
312-318	382
318-322	382
322-326	457
326-330	569
330-335	667
335-339	1500
339-339	Inf.
339-349	1000+
349-352	857
352-357	487
357-360	657
360-362	832
362-367	757
367-373	967
373-378	457
378-387	342
387-396	422
396-400	532


RAM HARDNESS
1000 800
TEMPERATURE, °C
800 400 200
-30 -20 -10
0 STRATIGRAPHIC
0 PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 7N7
Elevation - 1795 m
DATE 4 Jan., 1959 TIME Z
LOCATION 82° 08.5'S
109° 07'E
OBSERVERS Long - Doumani
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS
SAS
SAS
GRAIN SIZE, mm.
DEPTH, M.
DEPTH, M.
1
2
3
4
5
6
-29.4

IGY Bryd Traverse 1958-59

Station Mile 747

Date 4 January 1959

Observers Long, Doumani

STRATIGRAPHIC DATA SHEET

Depth cm	Hard-ness	Grain Size, mm	Remarks
0- 2	S	<.5	Soft, recently deposited snow
2- 7	M	.5-1.0	Harder recently deposited snow
7- 11	S	.5-1.5	
11			Crust
11- 17	S	.5-1.5	Drip crystals
17- 20	VH	.5-1.0	
20			Top of soft sastrugi surface
20- 36	S	1.0-1.5	
36- 39	S	.5-1.0	
39			Crust
39- 42	M	.5-1.0	
42- 45	S	1.0-1.5	
45			Crust
45- 48	H	.5-1.0	
48			Crust
48- 51	M	.5-1.0	
51			Crust
51- 60	M	.5-1.0	Small drip crystals
60- 61	S	1.0-2.0	
61			Crust
61- 67	M	1.0-3.0	Drip crystals
67- 75	FS	1.0-3.0	
75			Crust
75- 80	M	1.0-2.0	
80- 85	S	1.0-3.0	Drip crystals
85- 90	VH	.5-1.0	
90- 93	M	.5-1.5	
93-100	VH	.5-1.0	
100-103	S	1.0-2.0	
103			Crust
103-108	M	1.0-3.0	Drip crystals
108			Crust
108-114	M	1.0-3.0	Drip crystals
114			Crust
114-117	M	1.0-3.0	Drip crystals
117-120	H	1.0-2.0	Drip crystals
120-131	S	2.0-4.0	Drip crystals
131			Crust
131-132	VH	.5-1.5	Drip crystals
132-133	VS	2.0-6.0	Drip crystals; very loose layer
133-140	S	1.0-4.0	Drip crystals
140-146	H	1.0-2.0	Drip crystals
142			Crust
145			Crust

Depth cm	Hardness	Grain Size,mm	Remarks
146-152	VS	2.0-6.0	Sublimation layer, plate and drip crystals
152-154	VH	.5-2.0	
154-158	S	1.0-3.0	Drips
158			Crust
158-161	M	1.0-4.0	Drips
161-165	M	1.0-3.0	
165-174	S	2.0-4.0	Loose layer, drips
174			Crust
174-180	H	1.0-2.0	Drips
180			Crust
180-184	M	1.0-2.0	
184-190	H	.5-1.0	190--top soft sastrugi surface
190-191	VS	2.0-5.0	Loose layer--drips
191-196	S	1.0-4.0	Drips
195			Sastrugi surface
196-203	H	1.0-2.0	
203			Crust
203-212	H	.5-2.0	
212-220	VH	.5-1.5	
220			Crust
220-221	H	1.0-2.0	
221			Crust
221-226	VH	.5-1.5	
226-227	M	1.0-3.0	
227			Sastrugi surface
227-234	VH	1.0-1.5	
234-242	H	1.0-2.0	
242-243	H	1.0-2.0	
243-246	VH	1.0-1.5	
246-247	H	1.0-2.0	
247			Crust
247-255	H	1.0-2.0	
255			Crust
255-263	VH	1.0-2.0	Drips
261			Crust
263-268	VH	.5-1.0	
268-271	H	1.0-2.0	Drips
271-274	VH	1.0-2.0	
273			Crust
274-281	VH	1.0-1.5	
281			Crust
281-288	H	1.0-2.0	
288			Crust
288-301	VH	1.0-2.0	
301			Crust
301-305	VH	1.0-2.0	

Depth cm	Hardness	Grain Size, mm	Remarks
305			Crust
305-311	S	2.0-4.0	Loose layer
311-315	H	1.0-2.0	Drips
315			Crust
315-319	VH	1.0-2.0	Drips
319-322	H	1.0-2.0	Drips
322			Crust
322-325	H	1.0-1.5	
325			Crust
325-331	H	1.0-3.0	
331			Crust
331-332	H	1.0-4.0	
332-334	VH	1.0-2.0	
334-345	S	1.0-3.0	Drips
345-350	VH	1.0-2.0	
350-359	H	1.0-3.0	
359			Crust
359-362	M	2.0-4.0	
362-379	VH	.5-1.5	Extra hard layer
379-386	VH	1.0-2.0	Drips
386-389	S	2.0-4.0	Loose layer, drips
389-391	H	1.0-2.0	
391-400	M	1.0-3.0	
395			Crust

IGY Byrd Traverse 1958-59

Station Mile 747

Date 4 January 1959

Observers Long, Toumani

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
400-406	.501	M	S	#3 crust at 4.6 cm
406-412	.400	L	M	
412-419	.495	M	S	
419-425	.493	M	S	Break at 4 cm
425-427	.503	D	M	
427-432	.512	D	S	
432-436	.519	D	S	
436-440	.469	M	M	#1 crust 0 to 1.4 cm diagonally
440-443	.384	L	L	
443-450	.497	M	S	
450-453	.493	M	M	
453-460	.482	M	S	
460-465	.511	D	S	
465-472	.542	D	S	#1 crust 6.1 cm to 7.3 cm diagonally
472-478	.519	D	M	Double #2 crust at .5 to 1.6; double #2 crust 4.9 to 5.4
478-484	.508	M	M	
484-486	.460	L	M	
486-488	.557	D	S	
488-492	.519	D	M	
492-502	.486	M	M	
502-507	.526	D	S	
507-513	.527	D	S	0-1 medium packing and medium grained
513-518	.510	M	S	
518-522	.494	M	M	Double #1 crust at 2.2 cm; 2.5 cm to 3 cm loose packing; medium grained
522-532	.509	D	M	
532-545	.521	D	S	
545-549	.527	M	S	
549-555	.550	D	S	#1 crust at 0 to 0.7; #2 crust at 5.8 to 6.5 cm
555-565	.556	D	S	
565-570	.565	M	S	Double #1 crust at 3.3 to 3.8
570-573	.544	D	M	#1 crust at 2.6 to 3.2
573-580	.529	D	M	0 to 1 cm loose with medium grains
580-584	.558	D	S	Triple #1 crust at 0.5 cm; #2 crust at 3.2 cm
584-593	.523	D	M	Break at 1 cm
593-597	.537	M	S	
597-602	.522	M	M	
602-606	.556	M	M	Double #1 crust at 2 cm; double #1 crust at 2.7 to 3.7
606-609	.512	L	M	

Depth cm	Density	Packing	Grain Size	Remarks
609-618	.538	D	M	
618-622	.550	M	S	Double #1 crust at 4.4 cm
622-624	.593	M	S	
624-632	.550	D	S	
632-640	.562	D	S	
640-642	.531	M	M	
642-645	.539	L	M	
645-650	.523	M	L	
650-661	.543	D	M	Double #1 crust at 9.5 to 10.4 cm
661-671	.543	D	M	
671-677	.557	D	M	
677-683	.527	M	M	0-1.5 loose and medium grains; break at 1.0 cm
683-685	.556	M	M	
685-688	.554	M	M	
688-698	.549	D	M	#1 crust at 8.4 to 9.0 cm
698-706	.561	D	S	
706-709	.548	M	M	#2 crust at 0 to 0.7 cm
709-719	.551	D	M	
719-729	.545	M	M	Break at 4 cm; #2 crust at 3.6
729-733	.578	D	S	
733-739	.542	D	M	
739-743	.533	M	M	
743-751	.538	M	M	Crust at 6.6 to 7.1
751-755	.540	M	L	
755-758	.546	M	L	
758-762	.558	D	S	
762-765	.553	D	M	
765-771	.573	D	M	#1 crust at 0 to 0.7; #2 crust at 2.3
771-774	.556	M	M	
774-779	.550	M	M	
779-785	.565	D	M	#1 crust at 5.5 to 6.1
785-795	.562	D	S	
795-802	.582	D	S	
802-811	.548	M	M	
811-816	.572	M	S	
816-820	.555	M	L	Break at 2.5; #2 crust at 1.0 cm
820-823	.569	D	S	
823-828	.585	D	M	#3 crust at 3.2 cm
828-837	.571	D	S	
837-842	.587	D	M	
842-849	.558	M	M	
849-856	.565	D	S	
856-865	.584	D	S	Double #1 crust at 0 to 2.0 cm
865-871	.569	M	L	Break at 2 cm; #2 crust at 0 to 1.5 cm
871-873	.565	L	M	

Depth cm	Density	Packing	Grain Size	Remarks
873- 877	.565	M	M	
877- 880	.568	M	M	#3 crusts at 1.5, 2.0, 2.8
880- 890	.563	D	M	
890- 900	.587	D	S	#2 crust at 0.5 cm
900- 904	.608	D	S	
904- 914	.576	D	M	
914- 917	.539	L	M	Break at 1 cm
917- 922	.552	M	L	
922- 928	.583	D	M	
928- 937	.586	D	S	#2 crust at 8.8 to 9.3 cm
937- 941	.596	D	S	
941- 949	.570	D	M	
949- 952	.574	M	M	
952- 956	.590	D	M	#2 crust at 2.3 to 2.6 cm
956- 961	.571	M	M	
961- 964	.605	D	M	#3 crust at 1.8 cm
964- 968	.531	D	S	
968- 972	.571	D	M	
972- 978	.577	D	M	#1 crust at 5.6 to 6.4 cm
978- 983	.587	D	S	
983- 989	.591	D	S	
989- 999	.591	D	S	
999-1005	.603	D	S	#2 crust at 0.9 cm to 1.6 cm; double crust at 2.9 to 3.4
1005-1007	.622	D	M	#2 crust at 1.2 cm; #3 crust at 1.8 cm
1007-1010	.580	M	M	#1 crust at 2.9 cm
1010-1016	.580	D	M	
1016-1025	.588	D	S	#2 crust at 0.4 cm
1025-1032	.582			0-3 dense and small crystals; 3 to 7.1 dense and medium crystals
1032-1041	.579	D	L	Break at 2 cm; #3 crust at 6.3 cm
1041-1044	.571	M	L	
1044-1054	.606	D	S	
1054-1061	.612	D	S	#1 crust at 6.2 to 6.7 cm
1061-1067	.604	D	S	#2 crust at 3.4 cm; #1 crust at 5.1 to 5.9 cm
1067-1074	.585	D	S	#2 crust at 4.2 cm
1074-1084	.587	D	S	#2 crust at 0.1 cm
1084-1087	.572	D	M	Triple #1 crust at 1.0 to 1.5 cm
1087-1090	.597	D	M	#2 crust at 0 to 0.5 cm; #1 crust at 1.5 to 2.0 cm
1090-1096	.581	D	S	
1096-1104	.584	D	S	Double #1 crust 0 to 0.5 cm; #1 crust 7.2 7.6 cm
1104-1115	.588	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
1115-1120	.589	D	M	#3 crust at 1.4 to 3.1 cm
1120-1130	.591	D	S	#2 crust at 3.3 to 3.6 cm; #2 crust at 4.5 cm
1130-1139	.596	D	S	
1139-1145	.600	M	M	Double #1 crust at 1.5 to 2.6 cm
1145-1150	.603			0-1.5 D and L; 1.5 to 4.0 D and S; 4.0 to 4.5 D and M; #1 crust 0.2 to 4.0; #2 crust at 0.1
1150-1156	.574	D	S	
1156-1160	.580	M	M	Break at 3.5
1160-1165	.590	M	M	#3 crust at 3.5; #3 crust at 4.5 to 4.9
1165-1170	.569	M	L	
1170-1180	.587	D	M	
1180-1186	.595	D	M	
1186-1190	.625	D	S	
1190-1196	.589	D	M	
1196-1206	.603	D	M	Break at 3 cm
1206-1215	.602	D	M	
1215-1223	.575	M	L	
1223-1233	.594	D	M	#2 crust at 1.0; #1 crust at 2.2 to 2.8
1233-1238	.598	D	M	
1238-1246	.608	D	M	#1 crust at 0 to 0.5
1246-1250	.603	M	M	#2 crust at 3.6-3.9
1250-1258	.602	D	M	Triple #1 crust at 8.0 to 8.5
1258-1265	.600	D	M	
1265-1274	.618	D	S	#2 crust at .5 to 1.0; #1 crust at 8.3 to 9.0
1274-1280	.612	D	M	Double #2 crust at 4.8 to 5.1
1280-1284	.615	D	S	
1284-1294	.609	D	M	#1 crust at 0.0 to 0.9 cm
1294-1304	.610	D	S	
1304-1314	.608	D	M	
1314-1325	.603	D	M	
1325-1335	.610	D	M	#1 crust at 7.5 to 8.2 cm
1335-1344	.619	D	S	#2 crust at 2.5 to 3.9 cm
1344-1348	.620	D	M	#2 crust at 0 to 0.5; #2 crust at 2.3 cm
1348-1358	.608	M	M	#3 crust at 6.5 cm; #3 crust at 8.7 cm
1358-1362	.604	M	M	Double #2 crust at 0 to 1.5 cm; #1 crust at 2.1 to 2.6 cm
1362-1367	.608	D	M	Crust at .5 to .9 cm
1367-1377	.601	D	M	Double #2 crust at 1.5; #2 crust at 2.0
1377-1381	.605	M	L	Double #2 crust at 2.6 cm
1381-1391	.624	D	S	
1391-1395	.620	D	M	#3 crust at 4.0 cm
1395-1398	.613	M	M	

IGY Byrd Traverse 1958-59

Station Mile 747 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
1398-1402	.591	M	L	
1402-1412	.619	D	M	
1412-1417	.610	D	S	Double #1 crust at 4.1 to 4.6 cm
1417-1420	.622	M	M	
1420-1424	.612	M	L	Double #2 crust at 3.5 to 4.1 cm
1424-1433	.616	D	M	
1433-1438	.594	M	L	
1438-1445	.614	D	M	#2 crust at 0.1 cm
1445-1455	.608	D	M	#2 crust at 0-1 cm; #3 crust at 8.5 cm
1455-1465	.622	D	S	#3 crust at 3.5 cm
1465-1475	.614	D	M	
1475-1479	.633	D	M	#1 crust at 3.4 to 3.9
1479-1482	.630	D	M	
1482-1492	.616	D	M	
1492-1502	.619	D	M	
1502-1509	.633	D	S	#1 crust at 5.8 to 6.5 cm
1509-1516	.626	D	S	
1516-1518	.636	M	M	#2 crust at 1.0 cm; #3 crust at 1.4 cm; double #2 crust at 1.8 cm
1518-1528	.623	D	M	#3 crust at 1.5 cm
1528-1538	.616	D	M	
1538-1544	.619	M	M	#1 crust at 5.1 to 5.5 cm
1544-1555	.634	D	S	#3 crust at 9.7; #1 crust at 9.8 to 10.4 cm
1555-1564	.622	D	M	#3 crust at 5.5 to 6 cm; #1 crust at 8.5 to 9.0 cm
1564-1574	.619	D	M	
1574-1584	.619	D	L	#3 crust at 3.2 cm
1584-1587	.618	D	M	
1587-1596	.611	D	M	#1 crust at 0.3 to 0.8 cm; #2 crust at 4.3 to 4.5 cm
1596-1604	.626	D	L	Double #2 crust at 0.1; #3 crust at 1.5 cm
1604-1614	.630	D	M	#1 crust at 0 to 0.6 cm
1614-1623	.626	D	M	
1623-1631	.644	D	S	
1631-1633	.648	M	M	
1633-1643	.637	D	S	
1643-1653	.639	D	S	#3 crust at 1.5 to 2 cm
1653-1663	.648	D	S	#2 crust at 5.7 to 6.3 cm
1663-1672	.639	D	M	#2 crust at 0 to 1.1 cm; #3 crust at 1.8 cm
1672-1679	.625	D	L	
1679-1687	.657	D	S	#2 crust at 0 to 0.4 cm; #1 crust at 7.2 to 7.7 cm
1687-1696	.641	D	S	

Depth cm	Density	Packing	Grain Size	Remarks
1696-1704	.643	D	S	#3 crust at 7.0 to 7.8 cm
1704-1714	.630	D	M	
1714-1719	.647	D	S	
1719-1726	.651	D	M	#3 crust at 1 to 1.7 cm; #2 crust at 6.1 6.7 cm
1726-1739	.633	D	M	#3 crust at 1.0 cm
1739-1744	.641	D	L	
1744-1747	.648	D	M	
1747-1757	.650	D	S	
1757-1763	.646	D	M	
1763-1770	.647	D	S	
1770-1815	.658	D	L	Double #1 crust at 0.2 to 0.9 cm; #1 crust at 1 to 1.7; #1 crust at 3.1 to 3.8; double #2 crust at 4.0 to 4.8
1815-1825	.633	D	L	Break at 8.5 cm
1825-1836	.641	D	M	#2 crust at 0.7 to 1.5
1836-1843	.641	D	L	
1843-1847	.651	D	M	
1847-1852	.649	D	L	
1852-1856	.643	D	M	#1 crust at 3.1 to 3.5; #2 crust at 3.6-4.5
1856-1867	.640	D	M	Break at 10 cm
1867-1877	.649	D	M	#2 crust at 0 to 1.0 cm; #1 crust at 0.8 to 2.0 cm
1877-1887	.644	D	S	#2 crust at 6.7 cm
1887-1894	.648	D	M	#1 crust at 2.4 to 3.0 cm
1894-1902	.647	D	L	#2 crust at 0 to 0.4 cm; #1 crust at 0.5 to 1.3 cm; #1 crust at 7.2 cm
1902-1912	.644	D	M	
1912-1919	.653	D	L	
1919-1928	.657	D	S	
1928-1935	.652	D	L	Double #1 crust at 1.7 to 2.3 cm; #3 crust at 3.4 cm
1935-1945	.649	D	M	
1945-1955	.642	D	M	#2 crust at 1.1 to 1.6; #2 crust at 4.6 to 5.0 cm
1955-1959	.658	D	M	Double #2 crust at 3.3 to 4.1 cm
1959-1969	.659	D	M	
1969-1972	.671	D	M	Triple #1 crust at 0 to 0.8 cm

RAM HARDNESS DATA

Mile 753-911

(pp. 218-226)

RAM HARDNESS DATA SHEET

Station Horlick Mountains Traverse
Date 12-21 January 1959
Observer Doumani

Depth cm	Hardness Number, Kg
Mile 753	
0.7- 6	28
6 - 10	20
10 - 14	30
14 - 16	302
16 - 17	694
17 - 18	604
18 - 21	904
21 - 24	334
24 - 25	450
25 - 40	46
40 - 45	22
45 - 55	31
55 - 68	32
68 - 80	109
80 - 94	69
94 - 98	73
98 -107	305
107 -111	140
111 -120	45
120 -132	13
132 -144	28
144 -156	50
156 -176	55
176 -186	104
189 -193	262
193 -197	455
197 -204	392
204 -213	156
213 -225	206
225 -243	298
243 -251	137
251 -261	141
261 -270	223
270 -284	113
284 -294	306
294 -307	237
307 -315	250
315 -324	289
324 -331	435
331 -345	220
345 -354	239
354 -360	181
360 -366	331
366 -375	339
375 -379	944
379 -386	285
386 -391	156
391 -400	189
Mile 759	
0.5- 6	42
6 - 10	40
10 - 13	29
13 - 16	85
16 - 18	377
18 - 23	302
23 - 27	165
27 - 35	27
35 - 44	35
44 - 50	152
50 - 66	18
66 - 71	162
71 - 74	169
74 - 79	125
79 - 82	35
82 - 96	50
96 - 99	35
99 -108	155
108 -115	69
115 -120	23
120 -131	46
131 -135	28
135 -148	26
148 -157	35
157 -172	95
172 -180	152
180 -184	418
184 -189	96
189 -196	57
196 -200	254
200 -202	276
202 -208	96
208 -210	51
210 -217	109
217 -225	85
225 -228	36
228 -235	135
235 -254	106
254 -260	141
260 -266	201
266 -271	168
271 -281	141
281 -287	307
287 -294	84
294 -297	37
297 -304	58
304 -315	81
315 -320	79
320 -326	52
326 -342	193
342 -360	207
360 -369	147
369 -376	328
376 -380	367
380 -385	241
385 -390	187
390 -393	247
393 -398	187
398 -400	322
Mile 765	
0.4- 3	9
3 - 17	12
17 - 31	10
31 - 35	37
35 - 44	13
44 - 50	24
50 - 56	45
56 - 64	32
64 - 67	202
67 - 77	35
77 - 84	122
84 - 89	99
89 - 96	153
96 -106	253
106 -111	167
111 -113	140
113 -121	50
121 -125	95
125 -134	45
134 -140	170

RAM HARDNESS DATA SHEET

Station Horlick Mountains Traverse (Continued)

Depth cm	Hardness Number, Kg
140 -149	55
149 -170	31
170 -179	65
179 -192	54
192 -198	140
198 -203	113
203 -215	118
215 -225	185
225 -238	237
238 -245	263
245 -248	56
248 -257	156
257 -265	306
265 -271	256
271 -281	186
281 -286	486
286 -291	606
291 -296	576
296 -300	644

Mile 771

Depth cm	Hardness Number, Kg
0.5- 10	58
10 - 14	152
14 - 18	107
18 - 30	22
30 - 33	72
33 - 46	14
46 - 51	32
51 - 56	176
56 - 68	27
68 - 74	32
74 - 79	122
79 - 87	58
87 - 93	311
93 -107	109
102 -108	45
108 -117	70
117 -126	281
126 -130	163
130 -134	73
134 140	35
140 -155	65
155 -165	59
165 -173	73
173 -179	155
179 -187	61
187 -199	59
199 -205	291
205 -211	216
211 -220	206
220 -234	115
234 -239	294
239 -245	156
245 -250	168
250 -255	150
255 -264	206
264 -271	135
271 -278	109
278 -283	636
283 -287	756
287 -289	531
289 -300	1956

Mile 777

Depth cm	Hardness Number, Kg
0.2- 4	52
4 - 5	452
5 - 8	402
8 - 12	252
12 - 13	402
13 - 18	142
18 - 32	52
32 - 40	46
40 - 54	31
54 - 59	242
59 - 64	142
64 - 79	152
79 - 86	146
86 - 99	51
99 -103	43
103 -107	207
107 -115	39
115 -122	69
122 -132	95
132 -146	629
146 -157	103
157 -164	69
164 -168	28
168 -169	95
169 -174	131
174 -177	35
177 -183	20
183 -196	51
196 -207	309
207 -218	121
218 -226	199
226 -243	183
243 -249	206
249 -255	256
255 -261	156
261 -266	126
266 -271	396
271 -277	381
277 -281	456
281 -288	220
288 -291	206
291 -300	506

Mile 783

Depth cm	Hardness Number, Kg
2 - 11	13
11 - 26	11
26 - 34	7
34 - 40	42
40 - 43	49
43 - 45	72
45 - 46	602
46 - 47	402
47 - 49	177
49 - 58	102
58 - 60	52
60 - 66	60
66 - 73	167
73 - 77	140
77 - 81	102
81 - 84	52
84 - 87	420
87 - 88	305
88 - 92	365
92 - 98	125
98 -102	50
102 -105	35
105 -111	95
111 -123	35
123 -127	28
127 -129	50
129 -140	46

RAM HARDNESS DATA SHEET

Station Horlick Mountains Traverse (Continued)

Depth cm	Hardness Number, Kg
140 -146	23
146 -152	35
152 -161	45
161 -172	75
172 -181	105
181 -185	95
185 -194	66
194 -198	51
198 -205	237
205 -208	186
208 -215	135
215 -218	156
218 -221	156
221 -227	111
227 -235	44
235 -241	141
241 -250	256
250 -254	194
254 -261	370
261 -268	327
268 -273	306
273 -276	206
276 -283	649
283 -287	1131
287 -293	806
293 -297	456
297 -300	1006

Mile 791

Depth cm	Hardness Number, Kg
0.3- 3	25
3 - 6	29
6 - 19	6
19 - 27	40
27 - 29	62
29 - 41	22
41 - 51	20
51 - 54	42
54 - 63	35
63 - 81	34
81 - 87	38
87 - 91	191
91 - 94	203
94 -105	59
105 -109	53
109 -116	50
116 -123	96
123 -130	17
130 -134	253
134 -141	91
141 -149	61
149 -162	60
162 -171	205
171 -173	500
173 -184	551
184 -189	456
189 -199	231
199 -210	102
210 -218	194
218 -225	135
225 -231	156
231 -240	223
240 -251	211
251 -255	269
255 -265	126
265 -275	306
275 -281	506
281 -285	756
285 -288	706
288 -294	456
294 -300	306

Mile 799

Depth cm	Hardness Number, Kg
1 - 3	12
3 - 11	16
11 - 17	20
17 - 29	30
29 - 31	877
31 - 38	359
38 - 41	502
41 - 47	319
47 - 53	184
53 - 61	72
61 - 69	38
69 - 75	49
75 - 89	198
89 - 98	55
98 -110	73
110 -118	84
118 -123	41
123 -129	50
129 -136	75
136 -144	230
144 -157	33
157 -163	110
163 -168	77
168 -177	265
177 -187	96
187 -195	130
195 -201	276
201 -211	105
211 -220	66
220 -227	173
227 -235	118
235 -241	306
241 -245	164
245 -252	147
252 -256	186
256 -264	419
264 -271	327
271 -276	606
276 -282	756
282 -288	256
288 -294	506
294 -300	381

Mile 807

Depth cm	Hardness Number, Kg
1 - 12	15
12 - 18	17
18 - 22	27
22 - 29	12
29 - 39	15
39 - 43	52
43 - 47	227
47 - 57	26
57 - 64	28
64 - 68	17
68 - 69	122
69 - 72	252
72 - 79	288
79 - 83	152
83 - 94	93
94 -101	217
101 -103	275
103 -109	275
109 -114	365
114 -121	241
121 -125	43
125 -130	41

RAM HARDNESS DATA SHEET

Station Horlick Mountains Traverse (Continued)

Depth cm	Hardness Number, Kg
130 - 140	77
140 - 144	50
144 - 153	145
153 - 164	111
164 - 176	193
176 - 177	95
177 - 182	186
182 - 191	176
191 - 197	206
197 - 206	273
206 - 211	306
211 - 223	181
223 - 233	271
233 - 240	435
240 - 245	204
245 - 256	279
256 - 263	156
263 - 273	531
273 - 282	373
282 - 286	156
286 - 300	831

Mile 815

Depth cm	Hardness Number, Kg
0.4 - 3	19
3 - 5	37
5 - 8	19
8 - 26	8
26 - 33	13
33 - 38	176
38 - 42	62
42 - 51	25
51 - 58	23
58 - 65	28
65 - 68	52
68 - 73	152
73 - 76	102
76 - 82	85
82 - 92	83
92 - 99	89
99 - 108	86
108 - 113	43
113 - 119	120
119 - 125	170
125 - 129	110
129 - 138	78
138 - 140	140
140 - 150	41
150 - 153	95
153 - 158	167
158 - 169	128
169 - 174	95
174 - 182	118
182 - 186	163
186 - 194	62
194 - 206	51
206 - 211	78
211 - 219	40
219 - 228	106
228 - 236	107
236 - 241	60
241 - 249	231
249 - 254	294
254 - 263	206
263 - 269	231
269 - 274	96
274 - 279	216
279 - 285	356
285 - 294	339
294 - 300	1106

Mile 823

Depth cm	Hardness Number, Kg
0.5 - 2	32
2 - 15	9
15 - 23	31
23 - 29	142
29 - 35	152
35 - 43	21
43 - 46	319
46 - 51	62
51 - 60	24
60 - 70	27
70 - 83	33
83 - 89	35
89 - 93	28
93 - 97	141
97 - 107	78
107 - 116	70
116 - 120	253
120 - 128	174
128 - 138	122
138 - 144	65
144 - 152	73
152 - 170	35
170 - 178	118
178 - 184	80
184 - 193	46
193 - 201	119
201 - 210	136
210 - 221	170
221 - 236	186
236 - 241	132
241 - 247	81
247 - 255	174
255 - 264	176
264 - 272	186
272 - 276	231
276 - 281	216
281 - 286	156
286 - 289	231
289 - 300	8406

Mile 831

Depth cm	Hardness Number, Kg
0.3 - 3	69
3 - 5	102
5 - 10	27
10 - 15	18
15 - 18	35
18 - 21	242
21 - 24	135
24 - 31	38
31 - 33	27
33 - 38	12
38 - 46	252
46 - 52	369
52 - 56	227
56 - 61	182
61 - 65	65
65 - 84	50
84 - 97	57
97 - 110	118
110 - 120	123
120 - 126	45
126 - 134	91
134 - 142	191
142 - 146	245
146 - 156	35
156 - 166	125
166 - 172	85

RAM HARDNESS DATA SHEET

Station Horlick Mountains Traverse (Continued)

Depth cm	Hardness Number, Kg
172 -175	35
175 -184	45
184 -196	118
196 -207	347
207 -212	306
212 -228	100
228 -243	126
243 -252	506
252 -258	631
258 -263	396
263 -270	220
270 -279	256
279 -286	327
286 -300	295

Mile 839

Depth cm	Hardness Number, Kg
0.6- 10	11
10 - 12	12
12 - 14	17
14 - 19	116
19 - 24	122
24 - 26	47
26 - 38	20
38 - 44	235
44 - 48	40
48 - 55	16
55 - 56	102
56 - 64	315
64 - 68	377
68 - 74	304
74 - 80	229
80 - 86	214
86 - 90	185
90 -110	46
110 -120	41
120 -130	230
130 -144	63
144 -154	23
154 -160	125
160 -168	61
168 -177	95
177 -183	125
183 -194	170
194 -203	126
203 -209	81
209 -215	156
215 -223	175
223 -229	132
229 -233	119
233 -245	231
245 -254	106
254 -259	186
259 -266	435
266 -273	92
273 -280	156
280 -290	126
290 -299	223
299 -300	156

Mile 847

Depth cm	Hardness Number, Kg
0.7- 2	22
2 - 8	12
8 - 14	15
14 - 18	27
18 - 26	42
26 - 35	35
35 - 38	22
38 - 42	152
42 - 49	181
49 - 51	177
51 - 64	44
64 - 67	52
67 - 73	27
73 - 81	15
81 - 86	32
86 - 94	47
94 -103	59
103 -112	64
112 -120	97
120 -133	26
133 -145	20
145 -152	67
152 -161	170
161 -167	86
167 -171	91
171 -174	505
174 -176	605
176 -181	257
181 -185	119
185 -197	104
197 -207	159
207 -218	102
218 -222	44
222 -229	92
229 -235	56
235 -244	89
244 -255	279
255 -261	356
261 -268	92
268 -274	156
274 -289	106
289 -299	591
299 -300	456

Mile 855

Depth cm	Hardness Number, Kg
0.6- 4	45
4 - 12	16
12 - 15	22
15 - 20	104
20 - 37	16
37 - 51	34
51 - 58	41
58 - 73	12
73 - 75	18
75 - 78	23
78 - 88	33
88 - 96	44
96 -101	503
101 -104	335
104 -112	163
112 -116	95
116 -133	26
133 -140	31
140 -148	73
148 -162	198
162 -183	86
183 -193	141
193 -208	96
208 -209	36
209 -218	16
218 -220	51
220 -232	74
232 -246	38
246 -251	96
251 -260	146
260 -272	51
272 -279	57
279 -300	147

RAM HARDNESS DATA SHEET

Station Horlick Mountains Traverse (Continued)

Depth cm	Hardness Number, Kg
Mile 863	
1 - 9	8
9 - 17	33
17 - 26	12
26 - 33	29
33 - 38	16
38 - 40	12
40 - 44	77
44 - 46	167
46 - 48	122
48 - 52	182
52 - 58	42
58 - 70	25
70 - 80	29
80 - 90	20
90 - 94	26
94 -103	46
103 -109	33
109 -114	111
114 -121	63
121 -129	97
129 -139	48
139 -151	49
151 -164	22
164 -175	57
175 -183	72
183 -189	112
189 -190	1004
190 -198	287
198 -204	216
204 -217	145
217 -233	250
233 -239	131
239 -248	223
248 -259	115
259 -269	231
269 -281	194
281 -294	237
294 -300	356
Mile 871	
0.8- 6	36
6 - 11	50
11 - 23	18
23 - 33	19
33 - 35	52
35 - 39	100
39 - 44	44
44 - 48	70
48 - 56	17
56 - 64	42
64 - 76	15
76 - 89	23
89 - 95	33
95 -100	123
100 -116	44
116 -125	23
125 -132	67
132 -146	57
146 -157	68
157 -162	69
162 -166	131
166 -170	78
170 -179	70
179 -185	53
185 -191	104
191 -197	69
197 -204	47
204 -210	104
210 -215	124
215 -221	104
221 -233	87
233 -239	106
239 -248	96
248 -259	47
259 -268	196
268 -275	135
275 -285	96
285 -294	146
294 -300	111
Mile 879	
0.8- 23	10
23 - 28	62
28 - 33	86
33 - 40	28
40 - 46	27
46 - 53	53
53 - 62	29
62 - 67	20
67 - 78	35
78 - 89	30
89 - 95	43
95 -101	28
101 -106	33
106 -115	136
115 -126	92
126 -136	73
136 -152	41
152 -157	73
157 -161	53
161 -172	30
172 -183	44
183 -198	67
198 -201	337
201 -206	336
206 -211	204
211 -220	96
220 -226	186
226 -233	122
233 -241	175
241 -256	156
256 -261	126
261 -270	137
270 -277	199
277 -284	135
284 -300	194
Mile 887	
0.7- 4	35
4 - 13	13
13 - 24	20
24 - 36	12
36 - 41	122
41 - 43	177
43 - 53	22
53 - 56	35
56 - 67	16
67 - 70	12
70 - 76	22
76 - 82	52
82 - 88	43
88 - 97	30
97 -104	67

RAM HARDNESS DATA SHEET

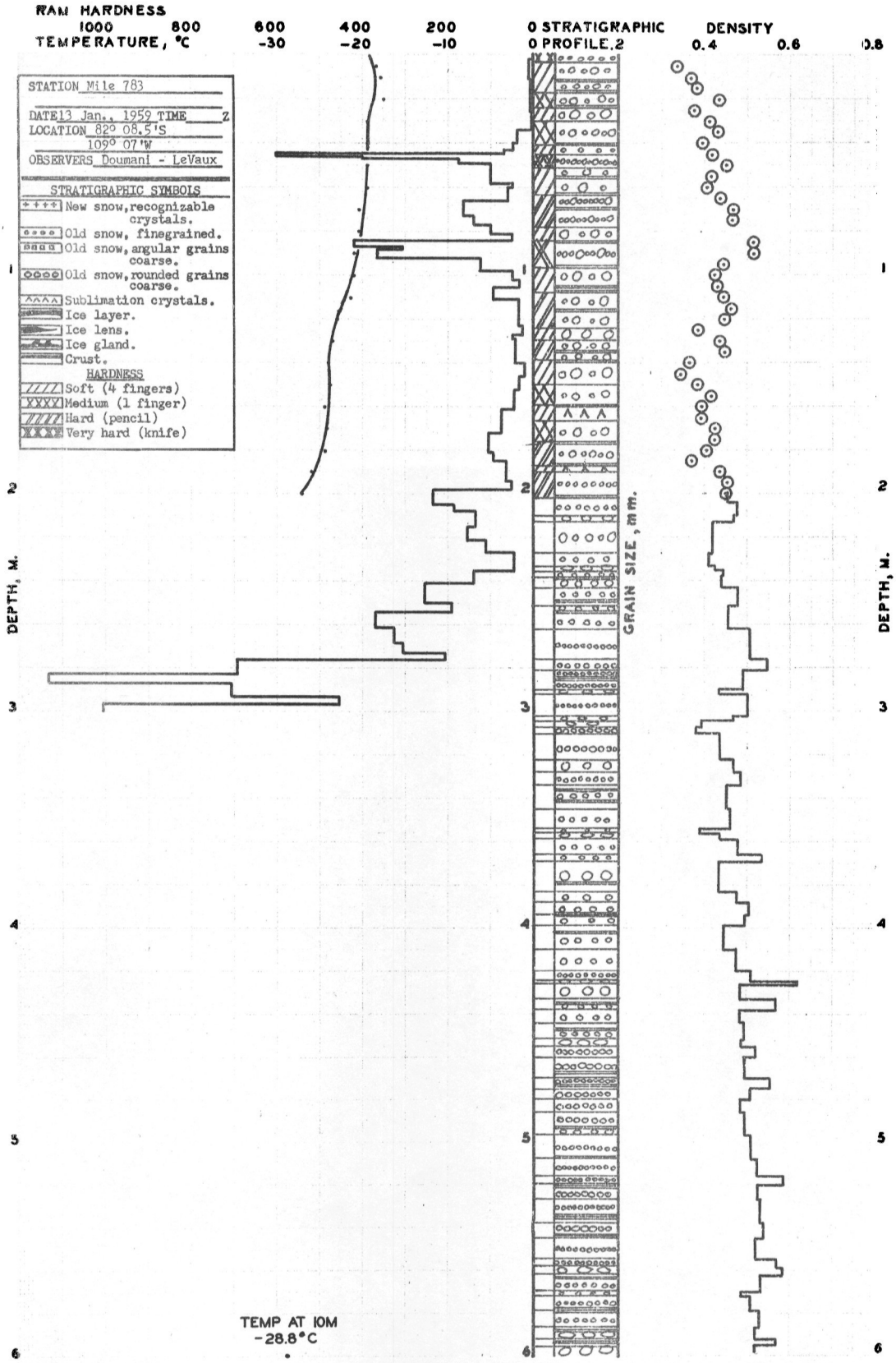
Station Horlick Mountains Traverse (Continued)

Depth cm	Hardness Number, Kg
104 -110	83
110 -116	33
116 -122	53
122 -128	98
128 -132	33
132 -150	50
150 -160	36
160 -169	40
169 -175	203
175 -182	117
182 -191	73
191 -199	231
199 -203	164
203 -207	66
207 -211	51
211 -216	132
216 -223	57
223 -229	66
229 -236	96
236 -245	76
245 -252	83
252 -261	96
261 -271	168
271 -282	252
282 -293	279
293 -300	156
Mile 893	
0.6- 4	69
4 - 12	65
12 - 18	37
18 - 31	21
31 - 43	40
43 - 49	77
49 - 59	22
59 - 68	41
68 - 71	35
71 - 84	41
84 - 96	61
96 -103	74
103 -114	53
114 -121	74
121 -128	39
128 -137	64
137 -149	53
149 -156	82
156 -165	42
165 -173	34
173 -180	167
180 -185	83
185 -193	42
193 -202	115
202 -211	98
211 -218	246
218 -222	306
222 -242	246
242 -244	81
244 -251	263
251 -254	56
254 -262	137
262 -264	81
264 -275	156
275 -280	96
280 -292	194
292 -300	250
Mile 903	
0.7- 9	22
9 - 15	9
15 - 17	102
17 - 21	302
21 - 23	177
23 - 35	27
35 - 45	8
45 - 47	17
47 - 51	10
51 - 53	152
53 - 55	107
55 - 66	21
66 - 71	26
71 - 73	302
73 - 75	102
75 - 90	20
90 -110	53
110 -119	47
119 -128	70
128 -137	36
137 -141	41
141 -156	74
156 -165	36
165 -170	43
170 -180	123
180 -199	98
199 -208	93
208 -214	46
214 -226	87
226 -231	64
231 -240	93
240 -250	104
250 -257	68
257 -261	142
261 -278	86
278 -289	95
289 -296	183
296 -300	129
Mile 911	
1 - 8	8
8 - 12	52
12 - 14	47
14 - 24	17
24 - 31	19
31 - 36	74
36 - 44	17
44 - 55	29
55 - 62	28
62 - 66	100
66 - 80	92
80 - 86	93
86 - 92	23
92 - 99	33
99 -109	21
109 -118	30
118 -124	53
124 -131	182
131 -139	128
139 -144	63
144 -158	74
158 -168	88
168 -176	78
176 -178	28
178 -181	37
181 -191	134
191 -198	75
198 -207	66
207 -215	96
215 -222	199
222 -234	51

RAM HARDNESS DATA SHEET

Station Horlick Mountains Traverse (Continued)

Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg	Depth cm	Hardness Number, Kg
234 -240	36				
240 -248	152				
248 -256	130				
256 -266	156				
266 -271	96				
271 -278	263				
278 -290	19				
290 -300	231				


RAM HARDNESS
1000 800 600 400 200 0
TEMPERATURE, °C -30 -20 -10 0
STRATIGRAPHIC PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 783
DATE 13 Jan., 1959 TIME Z
LOCATION 82° 08.5'S
109° 07'W
OBSERVERS Doumani - LeVaux
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 10M
-28.8°C

Station Mile 783
Date Jan. 13, 1959
Observers Doumani, Le Vaux

STRATIGRAPHIC DATA SHEET

Depth cm	Grain Size, mm	Remarks
0- 3	0-.5	Hard.
3- 17	.5-1	Very soft; crusts at 11, 17.
17- 20	0-.5	Hard.
20- 24	.5-1	Medium, loose; thin curst at 23.
24- 30	1-1.5	Soft, loose.
30- 41	.5-1.5	Medium, loose.
41- 45	0-.5	Soft, loose.
45- 51	.5-1	Very hard, tight.
51- 63	1-2	Soft, loose; crusts at 55, 63.
63- 78	.5-1.5	Medium, medium; crust at 69; sastrugi surface at 75.
78- 84	2-3	Very soft, loose; crust at 84.
84- 96	.5-1.5	Hard, tight; crust at 96.
96-107	1-3	Very soft, loose; crusts at 105, 107.
107-124	1-2	Hard, medium; crust at 116; sastrugi surface at 120.
124-129	2-3	Very soft, loose.
129-139	1-2	Soft, loose; crusts at 135, 139.
139-150	2-4	Very soft.
150-159	1-3	Soft, loose; crust at 159.
159-166	3-4	Soft, loose; sublimation xals.
166-176	1-3	Medium, loose; crust at 176.
176-187	1-2	Medium, medium; crust at 187.
187-190	3-4	Soft, loose; sublimation xals.
190-201	.5-1	Medium, tight.

Station Mile 783
Date 13 January 1959
Observer Doumani

CORE DATA

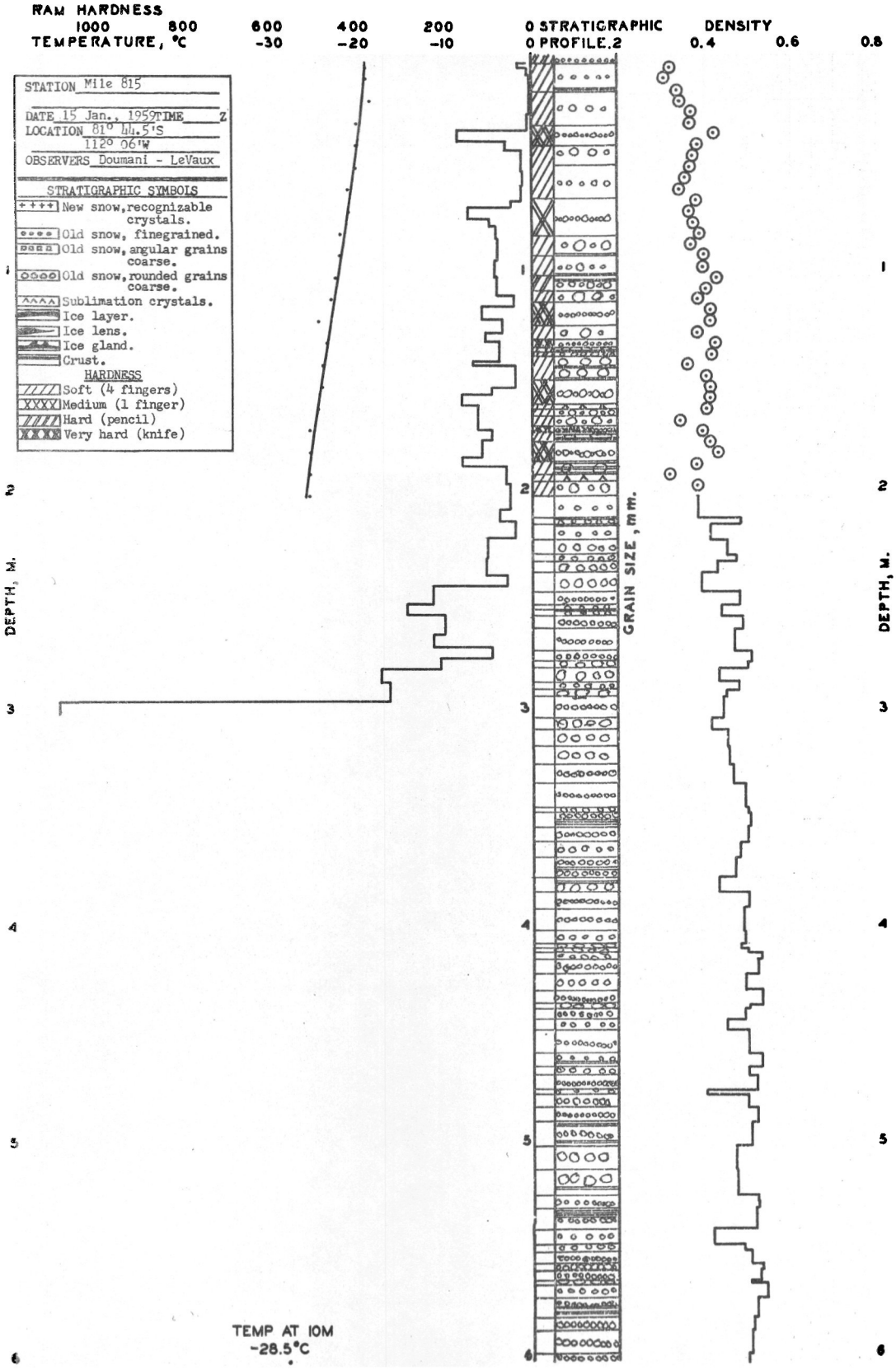
Depth cm	Density	Packing	Grain Size	Remarks
200-204	.456	D	M	Crust at 0.3 - 1.4
204-210	.476	D	M	
210-213	.468	D	L	
213-227	.421	D	L	
227-233	.410	M	M	
233-235	.425	L	L	
235-238	.443	M	M	Crust at 0.5 - 1.1
238-243	.441	L	M	
243-251	.480	D	M	Crust at 4.4
251-262	.454	D	M	Crust at 2.4 - 3.5
262-276	.505	D	S	
276-281	.548	D	M	
281-290	.490	D	S	Double crust at 3.5
290-292	.436	L	L	
292-302	.502	D	S	
302-304	.467	L	L	
304-307	.393	L	L	
307-310	.380	D	L	
310-322	.436	D	M	
322-328	.467	L	L	
328-334	.486	D	S	
334-345	.451	M	M	Crusts at 1.8, 6.6
345-354	.460	M	M	
354-356	.388	L	S	
356-359	.436	L	L	
359-366	.478	M	M	
366-369	.531	M	M	
369-383	.432	L	L	Crust at 10.4
383-388	.477	L	M	
388-394	.503	M	M	
394-399	.497	M	L	Double crust at 0.3
399-410	.446	M	M	Crust at 3.0 - 3.9
410-420	.473	M	M	
420-425	.510	D	S	
425-426	.618	D	L	
426-428	.483	M	L	
428-433	.485	M	L	
433-438	.567	D	M	Crust at 1.5 - 2.0
438-444	.484	D	M	
444-452	.494	M	M	Crust at 4.1
452-455	.489	M	L	
455-460	.521	D	M	
460-470	.495	D	M	Crust at 8.3
470-475	.554	D	S	Crust at 1.5 - 2.6

Station Mile 783
(Continued)

Depth cm	Density	Packing	Grain Size	Remarks
475-480	.510	D	M	
480-486	.484	D	M	
486-497	.497	D	M	Crust at 6.5
497-508	.511	D	S	
508-516	.527	D	S	Crust at 0.0 - 0.4
516-520	.586	D	S	
520-527	.527	D	M	Quadruple crust at 1
527-538	.535	D	S	Double crust at 8
538-545	.540	D	M	Double crust at 5.6 - 6.7
545-555	.523	D	S	
555-559	.570	D	S	
559-562	.585	D	L	
562-570	.535	D	M	Crust at 2
570-572	.485	D	L	
572-579	.507	D	M	Crust at 1.4
579-587	.530	D	M	Double crust at 1
587-592	.521	D	L	Thin crust at 1.1
592-595	.567	D	M	Double crust at 0.2 - 0.6
595-598	.520	D	L	
598-605	.517	D	L	
605-611	.543	D	L	
611-617	.537	D	M	Crust at 6.1
617-623	.545	D	M	Thin crust at 2.1
623-631	.513	D	M	Crust at 6.5
631-639	.556	D	S	
639-645	.563	D	M	Crust at 1.8
645-658	.530	D	S	Crust at 3.3
658-664	.554	D	S	
664-669	.501	D	L	
669-679	.487	D	L	Double crust at 6.9
679-686	.547	D	M	
686-694	.534	M	M	
694-703	.570	D	M	Crust at 0.9
703-716	.529	D	M	Double crust at 8.8; crust at 7.0
716-727	.541	D	M	
727-734	.550	D	L	
734-740	.535	D	L	
740-749	.557	D	S	Crust at 0.9
749-757	.540	D	S	
757-760	.531	D	L	
760-763	.558	D	L	Crust at 2.8
763-773	.549	D	M	Crust at 9.6
773-782	.582	D	S	
782-788	.580	D	S	Crust at 5.3
788-797	.550	D	M	Double crust at 4.7
797-808	.532	D	M	

Station Mile 783
(Continued)

Depth cm	Density	Pack-ing	Grain Size	Remarks
808-818	.569	D	S	Thin crust at 2.2
818-823	.553	D	S	Quadruple crust at 1.1
823-829	.563	D	S	
829-838	.551	D	S	
838-847	.544	D	S	
847-849	.582	D	M	
849-858	.550	D	S	Double crust at 6.3; crust at 2.4
858-867	.575	D	S	
867-878	.553	D	S	
878-888	.518	D	S	Crusts at 1.5, 3.7
888-899	.556	D	M	
899-904	.611	D	S	
904-909	.529	D	L	
909-914	.586	D	S	Crust at 3.7
914-921	.576	D	S	Double crust at 2
921-932	.563	D	S	Crusts at 0.2, 5.2
932-943	.568	D	S	Crust at 2.1; D, L at 935.7-937.5


RAM HARDNESS
1000 800 600 400 200 0
TEMPERATURE, °C -30 -20 -10 0
STRATIGRAPHIC PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 815
DATE 15 Jan., 1959 TIME Z
LOCATION 81° 44.5'S
112° 06'W
OBSERVERS Doumani - LeVaux
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 10M
-28.5°C

Station Mile 815
Date Jan. 15, 1959
Observers Doumani, Le Vaux

STRATIGRAPHIC DATA SHEET

Depth cm	Grain Size, mm	Remarks
0- 3	0.0-0.5	
3- 16	0.0-0.5	Crust at 15
16- 31	1.0-1.5	
31- 40	0.5-1.0	
40- 47	1.0-2.0	
47- 49	1.0-1.5	One layer
49- 64	0.5-1.0	
64- 81	0.5-1.5	
81- 90	1.0-3.0	Crust at 90
90- 99	0.5-2.5	Crust at 99
99-106	1.0-2.0	Crust at 101
106-111	1.0-3.0	
111-122	0.5-1.5	
122-128	1.0-3.0	
128-132	0.5-1.0	
132-134	1.0-3.0	Crust at 134
134-136	1.0-2.0	
136-147	2.0-4.0	Crust at 141, 146, 147
147-158	1.0-2.0	
158-160	2.0-4.0	Sublimation crystals
160-163	1.0-2.0	
163-168	1.0-3.0	
168-171	0.5-1.5	
171-175	2.0-3.0	Crust at 172, 174
175-184	1.0-2.0	
184-190	2.0-4.0	Crust at 185, 187, 190
190-193	3.0-5.0	Sublimation crystals
193-200	1.0-3.0	

Station Mile 815
Date 15 January 1959
Observer Doumani

CORE DATA

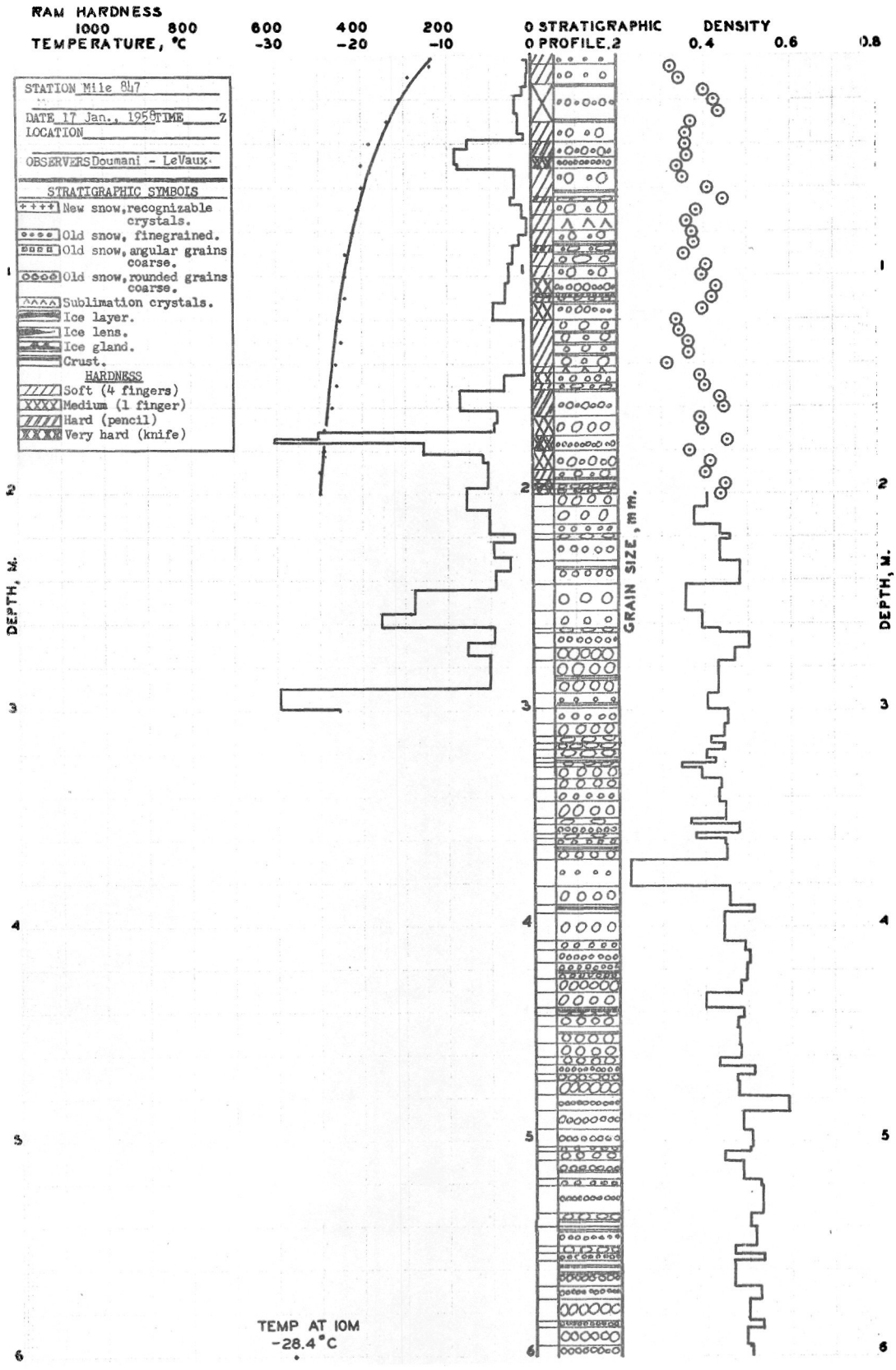
Depth cm	Density	Packing	Grain Size	Remarks
200-210	.389	L	S	
210-213	.484	M	M	Crust at 0.3
213-220	.414	L	S	Crust at 0.1
220-227	.453	M	M	
227-230	.475	M	M	
230-235	.431	M	L	
235-244	.395	M	L	Break at 1.5
244-250	.489	D	S	
250-255	.441	M	M	Crust at 2.4
255-261	.490	D	M	
261-271	.471	D	S	
271-276	.510	D	M	Break at 1.5
276-279	.501	M	L	
279-285	.436	M	M	
285-289	.480	M	M	
289-292	.451	M	L	
292-302	.445	D	M	
302-307	.418	M	L	Break at 1.8
307-315	.457	M	L	
315-323	.458	M	L	
323-332	.468	D	M	M, M at 4.7-5.1
332-343	.497	D	S	
343-345	.502	M	M	
345-352	.506	D	M	Crusts at 3.9, 4.6, 5.3
352-359	.503	D	M	
359-366	.484	M	M	Break at 2.1
366-375	.473	D	M	Crust at 5.3
375-382	.433	M	L	Crust at 2.2
382-389	.504	D	S	
389-400	.492	D	M	
400-406	.495	M	M	
406-408	.486	M	L	
408-410	.501	M	L	
410-413	.531	M	M	
413-420	.523	D	M	
420-427	.499	M	M	Break at 3.7
427-434	.534	D	S	
434-436	.509	M	L	
436-441	.498	D	M	
441-446	.453	M	M	
446-457	.506	D	S	
457-463	.534	M	S	Crust at 4.2
463-467	.505	M	M	

Station Mile 815
(Continued)

Depth cm	Density	Packing	Grain Size	Remarks
467-474	.525	D	S	
474-476	.408	L	S	
476-482	.501	D	M	
482-489	.528	D	S	
489-500	.512	D	M	Crusts at 1.4, 9.8
500-511	.476	M	L	Break at 2.0
511-523	.478	M	L	Crust at 9.4
523-526	.524	D	M	
526-529	.525	D	M	
529-532	.522	D	M	Crusts at 0.4, 1.8
532-539	.521	D	M	
539-546	.421	M	M	
546-549	.494	M	M	Crust at 0.4
549-555	.510	D	S	
555-558	.538	D	M	
558-563	.532	D	S	
563-564	.509	M	L	
564-567	.545	M	S	
567-571	.545	M	S	
571-580	.522	D	S	Crusts at 5.3, 6.6
580-586	.516	D	M	
586-597	.510	D	M	
597-605	.502	D	S	Crust at 7.5
605-617	.535	D	S	
617-634	.535	D	S	
634-646	.546	D	S	
646-653	.548	D	M	Crusts at 4.0, 5.6
653-663	.526	D	M	Crust at 1.4
663-667	.648	M	M	Double crust at 1.0
667-673	.525	M	M	Crust at 0.4
673-680	.520	D	M	
680-689	.548	D	S	Crust at 0.2
689-696	.550	D	S	Crust at 0.6-1.9
696-707	.536	D	S	Crust at 1.2; double crust at 6.9
707-717	.555	D	S	
717-721	.605	D	M	
721-727	.521	D	M	
727-738	.533	D	M	Crust at 4.0
738-747	.530	D	S	Thin crust at 2.5
747-751	.585	D	S	
751-756	.536	D	M	Crust at 1.1
756-762	.538	D	S	Crust at 3.5
762-769	.553	D	S	
769-776	.526	D	M	
776-783	.556	D	S	
783-791	.530	D	S	Crust at 4.4
791-799	.530	D	S	Double crust at 1.3; break at 6.6

Station Mile 815
(Continued)

Depth cm	Density	Pack-ing	Grain Size	Remarks
799-809	.545	D	S	Crust at 1.9-3.1
809-820	.545	D	S	Crust at 5.7
820-824	.540	D	S	
824-828	.493	D	M	
828-834	.578	D	M	
834-839	.562	D	S	
839-843	.572	D	M	
843-848	.535	D	S	
848-854	.542	D	S	Crust at 0.9
854-863	.567	D	S	Crust at 0.8
863-874	.561	D	S	
874-877	.509	D	M	
877-882	.575	D	S	
882-894	.563	D	S	Crust at 7.4
894-903	.575	D	S	
903-905	.567	D	M	
905-916	.552	D	S	
916-927	.539	D	S	Thin crust at 3.7
927-938	.555	D	S	Crusts at 5.7, 8.2
938-947	.571	D	S	Crusts at 2.5, 3.7


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC PROFILE.2
DENSITY
0.4 0.6 0.8
STATION Mile 847
DATE 17 Jan., 1958 TIME Z
LOCATION
OBSERVERS Doumani - LeVaux
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 10M
-28.4°C

Station Mile 847

Date Jan. 18, 1959

Observers Doumani, Le Vaux

STRATIGRAPHIC DATA SHEET

Depth cm	Grain Size, mm	Remarks
0- 4	0.0-0.5	
4- 13	0.5-1.0	Crust at 13
13- 30	0.5-1.0	Crust at 30
30- 39	0.5-2.0	
39- 46	0.5-2.0	
46- 51	0.5-1.0	
51- 64	1.0-3.0	Crust at 62
64- 66	1.0-3.0	
66- 72	1.0-3.0	
72- 79	2.0-5.0	Sublimation crystals
79- 86	1.0-3.0	Crust at 85
86- 89	1.0-3.0	Crust at 89
89- 95	2.0-4.0	Crust at 95
95-101	1.0-3.0	
101-108	0.5-2.0	
108-109	0.0-0.5	
109-111	1.0-3.0	Crust at 111
111-120	0.5-1.5	
120-141	2.0-4.0	Crust at 126, 131, 136
141-144	4.0-6.0	Sublimation crystals
144-149	0.5-1.5	
149-152	2.0-4.0	Crust at 152
152-164	0.5-1.5	
164-173	1.5-2.5	
173-180	0.5-1.5	
180-189	1.5-3.0	
189-193	0.5-2.5	
193-195	1.5-3.5	Crust at 195
195-198	0.5-1.5	
198-200	1.0-3.0	

Station Mile 847
Date 17 January 1959
Observer Doumani

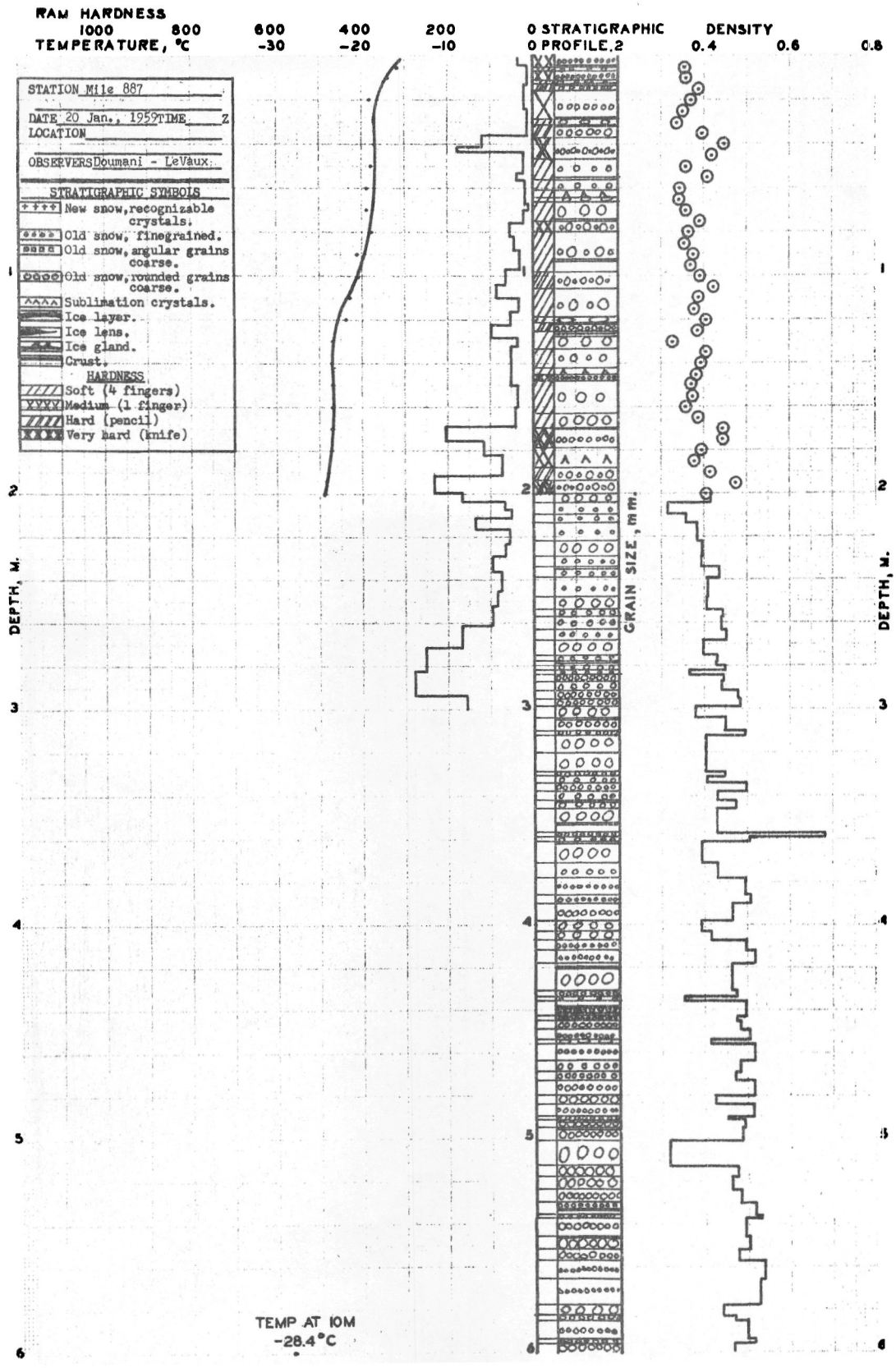
CORE DATA

Depth cm	Density	Packing	Grain Size	Remarks
200-206	.405	M	L	
206-214	.375	L	L	
214-219	.436	M	M	
219-221	.459	L	L	
221-231	.434	M	M	
231-242	.480	M	M	Crust at 2.6
242-254	.355	L	L	
254-262	.393	L	M	
262-264	.436	L	L	
264-271	.501	D	M	
271-277	.468	D	L	
277-292	.430	M	L	Double crust at 8.0
292-299	.413	L	S	Crust at 4.6
299-306	.452	M	M	
306-312	.443	M	L	
312-315	.411	L	L	
315-318	.445	M	L	
318-322	.401	L	L	
322-324	.422	L	L	
324-326	.345	L	L	Crust at 0.3
326-331	.390	M	L	
331-336	.436	M	L	
336-342	.432	M	M	
342-350	.447	M	L	
350-352	.368	L	L	
352-357	.477	D	M	
357-359	.379	L	L	
359-362	.444	M	M	
362-369	.446	M	L	Double crust at 1.2
369-381	.224	L	S	
381-390	.454	M	L	
390-393	.511	M	M	Crust at 1.9-2.6
393-407	.444	M	L	Crust at 5.2
407-411	.492	M	M	
411-417	.502	D	M	
417-425	.496	D	M	Crust at 4.8
425-431	.481	D	L	
431-438	.400	M	L	
438-442	.489	D	L	Crust at 0.7
442-447	.478	M	L	
447-455	.477	M	L	Crust at 2.6
455-461	.480	M	L	
461-465	.431	M	L	

Depth cm	Density	Packing	Grain Size	Remarks
465-469	.511	D	S	
469-472	.471	D	L	
472-479	.472	D	L	
479-486	.590	D	S	
486-495	.484	D	M	
495-503	.506	D	M	
503-505	.500	M	M	
505-509	.442	M	L	
509-518	.486	D	M	Crust at 6.3
518-521	.529	M	M	
521-534	.530	D	S	
534-540	.502	M	L	Crust at 4.3
540-549	.516	D	S	Crust at 2.3
549-553	.463	M	L	
553-556	.532	D	S	
556-568	.463	D	M	Crusts at 3.3, 5.6
568-574	.523	D	S	
574-583	.497	D	L	
583-584	.498	D	L	
584-587	.531	D	S	
587-595	.493	D	L	
595-600	.507	D	M	
600-602	.540	M	L	
602-608	.531	D	M	
608-610	.525	M	L	
610-614	.522	D	S	
614-617	.530	M	M	
617-630	.484	D	M	Crust at 0.4
630-635	.485	M	L	
635-639	.511	D	M	
639-648	.525	D	S	
648-667	.503	D	L	
667-679	.526	D	M	Crusts at 3.8, 2.6
679-684	.549	D	M	Double crust at 0.4-1.6
684-692	.510	D	L	
692-697	.552	D	M	
697-699	.480	M	L	
699-702	.556	D	M	
702-707	.524	D	L	
707-714	.560	M	L	
714-721	.510	D	M	Crust at 6.2
721-732	.555	D	S	
732-740	.538	D	M	
740-747	.530	D	M	
747-751	.551	D	L	
751-762	.540	D	M	Double crust at 0.9

Station Mile 847
(Continued)

Depth cm	Density	Packing	Grain Size	Remarks
762-767	.536	D	M	
767-770	.567	D	M	
770-778	.544	D	S	
778-788	.559	D	S	Crust at 0.1-0.8
788-798	.552	D	M	
798-809	.551	D	M	
809-816	.560	D	M	
816-823	.577	D	M	
823-830	.564	D	L	
830-837	.554	D	L	Crust at 1.6
837-844	.526	D	M	Crusts at 2.0, 3.3
844-854	.538	D	M	
854-861	.563	D	M	Crust at 1.6
861-869	.564	D	M	
869-875	.596	D	M	Crust 0.4-1.1
875-885	.545	D	M	
885-893	.556	D	S	
893-902	.550	D	L	Double crust 1.8-2.7
902-915	.550	D	L	
915-922	.537	D	L	Crust at 1.4
922-935	.554	D	M	
935-936	.514	M	L	
936-945	.548	D	M	
945-955	.546	D	M	


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION Mile 887
DATE 20 Jan., 1959 TIME Z
LOCATION
OBSERVERS Doumani - LeVaux
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 10M
-28.4°C

Station Mile 887
Date Jan. 20, 1959
Observers Doumani, Le Vaux

STRATIGRAPHIC DATA SHEET

Depth cm	Grain Size, mm	Remarks
0- 5	0.0-0.5	Crust at 5
5- 7	0.5-1.0	
7- 11	0.0-0.5	
11- 13	0.5-2.5	Crust at 13
13- 16	0.5-1.0	
16- 29	0.5-1.5	Crust at 29
29- 31	1.5-3.0	Crust at 31
31- 37	1.5-2.0	
37- 47	0.5-1.5	
47- 56	0.5-1.5	Crust at 56
56- 61	0.5-1.5	
61- 64	3.0-4.0	Sublimation crystals
64- 66	2.0-3.0	
66- 75	2.0-3.0	Crust at 75
75- 80	0.5-1.5	
80- 98	1.0-3.0	Crust at 93
98-106	0.5-1.5	
106-119	1.0-3.0	
119-121	2.0-4.0	Crust at 121
121-125	1.5-3.0	
125-133	2.0-4.0	Crust at 126
133-142	1.5-3.0	
142-145	2.0-5.0	Sublimation crystals
145-148	0.5-1.0	
148-163	2.0-4.0	
163-170	2.0-4.0	Crust at 170
170-179	0.5-1.5	
179-188	2.0-4.0	Sublimation crystals
188-194	1.5-2.5	
194-200	0.5-1.5	

Station Mile 887
Date 20 January 1959
Observer Doumani

CORE DATA

Depth cm	Density	Packing	Grain Size	Remarks
200-204	.417	M	L	
204-209	.313	L	S	
209-213	.358	L	S	
213-222	.384	L	S	
222-229	.397	M	L	
229-234	.392	M	S	
234-239	.436	M	S	Double crust at 0.3
239-248	.406	M	S	
248-254	.409	M	L	
254-257	.443	M	M	
257-263	.440	M	M	
263-268	.451	M	S	
268-275	.398	M	L	
275-278	.430	M	M	
278-280	.427	M	M	Crust at 1.1
280-282	.448	M	M	
282-284	.368	M	S	
284-287	.444	D	M	
287-291	.442	M	M	
291-295	.478	D	M	
295-299	.482	D	M	
299-304	.380	M	L	
304-310	.450	D	M	Crust at 0.3
310-312	.496	D	M	
312-320	.403	M	L	
320-329	.403	M	L	
329-331	.448	D	M	
331-334	.408	M	M	
334-338	.497	D	M	
338-342	.430	M	M	
342-346	.471	M	M	Crust at 0.2
346-357	.430	M	L	Crust at 7.2
357-359	.682	D	M	
359-361	.505	M	M	Crust at 0.1
361-371	.394	M	L	
371-380	.432	M	M	
380-386	.494	D	S	
386-390	.509	D	S	
390-398	.463	D	M	
398-403	.392	M	L	
403-407	.416	M	L	
407-412	.498	D	S	
412-418	.517	D	S	

Station Mile 887
(Continued)

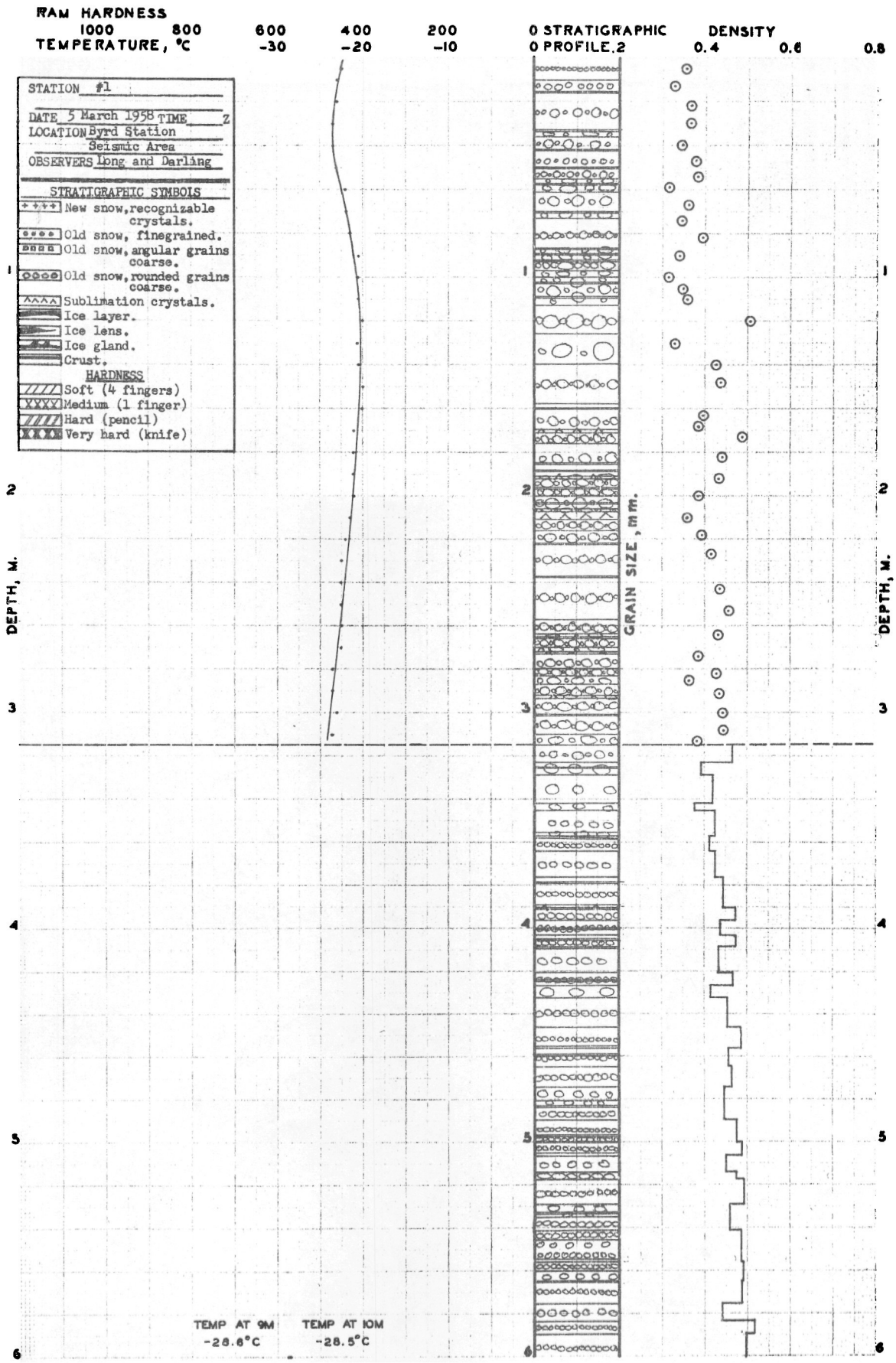
Depth cm	Density	Packing	Grain Size	Remarks
418-431	.464	M	L	Crust at 1.7
431-434	.474	D	M	
434-436	.352	L	S	
436-443	.496	D	M	Crusts at 3.0, 6.1
443-445	.473	D	S	Crust at 0.1
445-449	.486	D	M	
449-454	.508	D	S	
454-456	.413	M	L	
456-464	.519	D	S	
464-469	.483	M	M	
469-473	.472	D	M	
473-480	.514	D	M	
480-484	.425	D	L	
484-490	.513	D	S	
490-491	.452	D	M	
491-495	.491	D	M	Crust at 1.4
495-501	.488	D	M	Double crust at 0.3
501-513	.318	M	L	
513-518	.474	D	L	
518-524	.461	D	L	
524-530	.481	D	M	
530-536	.515	D	S	Crust at 3.2
536-537	.530	D	S	
537-546	.495	D	M	
546-552	.502	D	L	Crust at 1.4
552-557	.474	D	M	
557-566	.539	D	S	
566-578	.529	D	S	
578-583	.440	M	L	
583-585	.469	D	M	
585-594	.499	D	M	
594-596	.513	D	M	
596-599	.465	D	L	
599-605	.565	D	S	
605-608	.514	D	M	
608-610	.491	D	L	
610-618	.534	D	S	
618-620	.540	D	S	
620-633	.497	D	M	
633-643	.516	D	M	
643-647	.527	D	S	
647-650	.494	D	M	
650-659	.531	D	S	
659-669	.512	D	S	
669-671	.494	D	L	
671-674	.555	D	S	Double crust at 0.2
674-680	.511	D	S	

Station Mile 887
(Continued)

Depth cm	Density	Packing	Grain Size	Remarks
680-687	.517	D	M	
687-691	.545	D	S	
691-697	.567	D	S	
697-704	.539	D	M	
704-709	.533	D	M	
709-712	.481	D	L	
712-718	.543	D	S	Crust at 1.8
718-724	.568	D	S	
724-730	.543	D	S	
730-738	.564	D	S	
738-743	.548	D	M	Crust at 1.5-1.9
743-748	.517	D	L	
748-755	.552	D	M	
755-759	.518	D	L	
759-766	.544	D	M	Crust at 2.6
766-770	.498	D	L	
770-782	.559	D	S	
782-792	.549	D	S	Crust at 7.1
792-803	.506	D	M	
803-805	.597	D	S	
805-808	.558	D	M	Crust at 0.1
808-813	.564	D	S	Crust at 0.9
813-819	.543	D	S	
819-821	.597	D	S	
821-824	.562	D	S	
824-828	.583	D	S	
828-836	.579	D	S	Crust at 1.3-2.1
836-841	.571	D	S	Crust at 1.5-2.7
841-854	.541	D	M	
854-860	.566	D	S	
860-867	.575	D	S	
867-869	.607	D	S	Crust at 1.6
869-877	.541	D	M	Crust at 3.6
877-883	.555	D	M	
883-885	.534	D	M	
885-893	.570	D	S	Crust at 2.5
893-905	.535	D	L	
905-909	.548	D	L	Double crust at 3.0
909-917	.538	D	L	
917-921	.402	D	L	
921-931	.537	D	M	
931-938	.513	D	L	Break at 3.6

APPENDIX II

STATION DATA


RAM HARDNESS
1000 800 600 400 200
TEMPERATURE, °C -30 -20 -10
0 STRATIGRAPHIC 0 PROFILE 2
DENSITY
0.4 0.6 0.8
STATION #1
DATE 5 March 1958 TIME Z
LOCATION Byrd Station
Seismic Area
OBSERVERS Long and Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 9M -28.6°C
TEMP AT 10M -28.5°C

Byrd Station
Station Seismic Area Pit No. 1
Date 5 March 1958
Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 10	H	.5 and less	New snow, wind packed
10- 16	M	.5-1.5	Drip grains
16			Crust, granular, 2 mm thick; drip grains
16- 34	M	.5-2.0	
34			Crust
34- 36	S	1.0-3.0	Loose; drip grains
36- 42	M	.5-2.0	
42			Crust
42- 50	M	.5-1.0	Softer than 36-42
50			Crust
50- 55	H	.5-1.5	
55- 57	S	1.0-2.0	Loose
57			Crust
57- 61	S	2.0-5.0	Extra soft, loose; sublimation crystals; drip grains
61- 70	M	1.0-2.5	
70			Undulating crust
70- 73	S	1.0-3.5	Extra soft, drip grains
73- 87	H	.5-1.5	
87			Crust, 1 mm; drip grains
87- 89	S	1.0-4.0	Loose, drip grains
89			Crust
92			Crust
92- 97	S	2.0-4.0	Harder than 87-89, drip grains
97-100	H	1.0-4.0	Drip grains (icy)
100-113	M	1.0-4.0	Drip grains
102			Crust, granular, 4 mm thick
109			Crust, 1 mm thick
113-126	H	.5-2.0	Undulating top and bottom
126-140	S	1.5-5.0	Loose, sublimation crystals, drip grains
140-160	VH	.5-2.0	
158			Crust, very thin, <1 mm
160-170	M	1.0-2.0	Drip grains
170-171	S	2.0-6.0	Loose, sublimation crystals, drip grains
171-176	VH		
176-191	H	1.0-2.5	Drip grains
185			Crust, thin
188			Crust, thin
191-192	M	1.0-3.0	Loose, drip grains
192-196	VH	.5-3.0	
196			Crust, thin

Station Byrd Station Seismic Area Pit No. 1 (Continued)

Depth cm	Hard-ness	Grain Size, mm	Remarks
196-200	VH	1.0-2.0	Drip grains
200-206	H	1.5-3.5	Porous
203			Crust, granular, 3 mm thick
206-207	H	1.0-2.0	Lensatic unit, drip grains
207-211	M	1.0-4.0	Sublimation crystals, drip grains
211-216	VH	.5-1.5	
216-222	H	1.0-2.5	Drip grains
222			Crust, granular and fused grains, 3 mm thick
222-237	H	1.0-2.5	Harder than 216-222
237			Crust, thin, granular, 1 mm thick
237-257	VH	.5-3.0	
257-264	VH	1.0-2.5	Harder than layer above
264-266	S	2.0-5.0	Loose, sublimation crystals, drip grains
266			Crust, undulating, 1 mm thick
266-270	VH	1.0-2.0	
270-272	M	1.0-4.0	Porous, drip grains
272			Crust, even, 2 mm thick
272-273	M	1.0-4.0	Porous, drip grains
273-280	H	1.0-2.5	
280-283	VH	.5-1.5	Drip grains
283-287	M	1.0-4.0	Porous, drip grains
287-292	VH	1.0-2.5	Drip grains
292-293	M	2.0-3.0	Drip grains, loose
293-301	VH	1.0-2.5	Drip grains
301			Crust
301-310	VH	1.0-3.0	
310-315	M	1.0-2.5	Drip grains

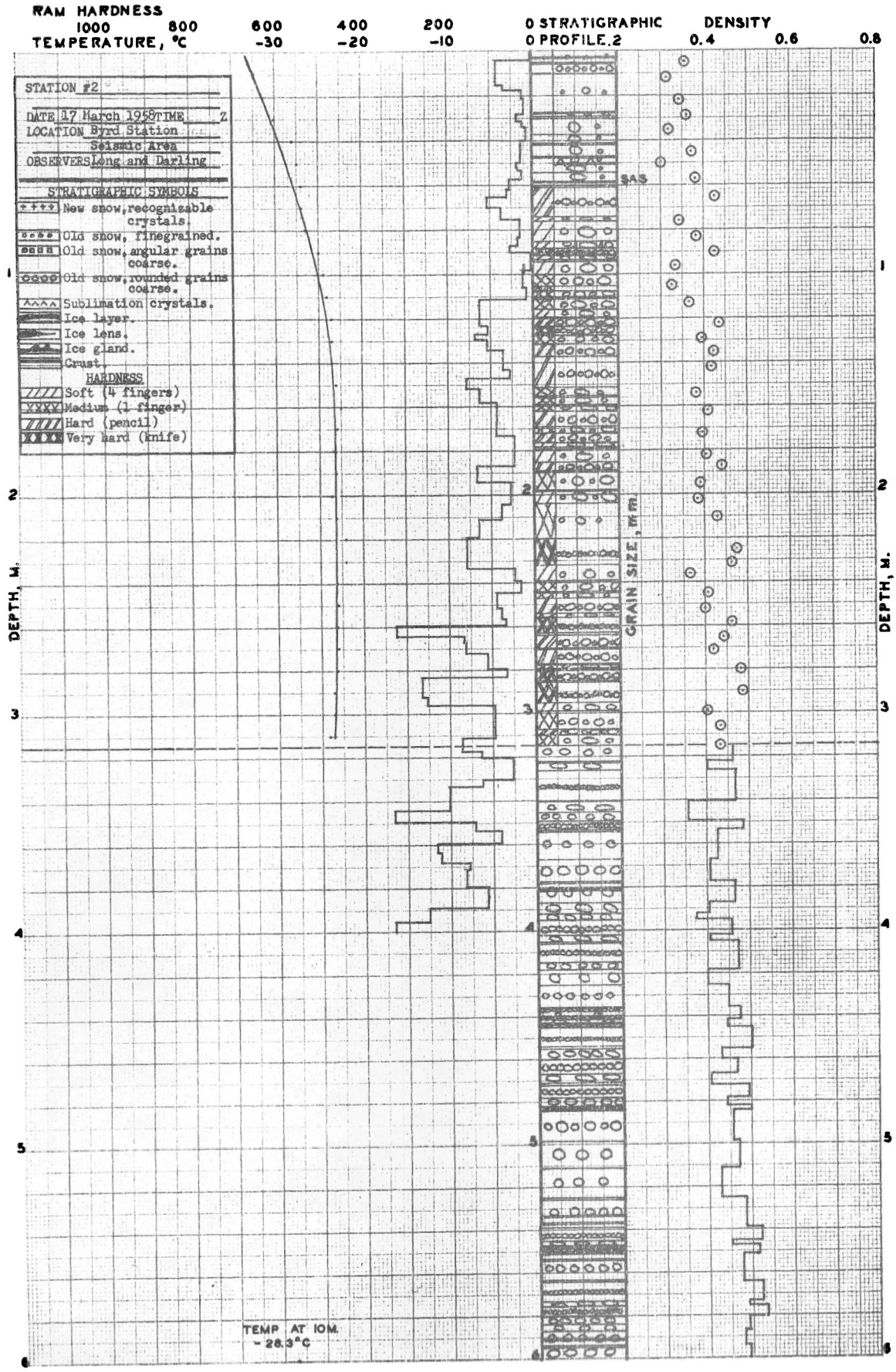
Byrd Station
Station Seismic Area Pit No. 1
Date 5 March 1958
Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
315-323	.466			0-3.5 medium packing, 1.5 mm; 3.5-8.0 dense, 1.0 mm
323-329	.392	L	3.0	No. 2 crust at 1.5 to 2.0 cm
329-342	.420	L	2.0	
342-346	.379	L	2.0	Sastrugi pattern
346-357	.424	M	1.5	Loose and 2 mm grains bottom 2 cm
357-364	.413	D	1.5	Crust 0.0 to 1.5 cm with loose area above and below crust
364-376	.427	M	2.0	
376-391	.444	D	2.0	No. 2 crust at 1.5 and 13.0 cm
391-396	.471	D	2.0	0-1 cm loose and 4 mm
396-404	.439	D	1.5	No. 1 crust at 3.5 cm
404-408	.473	D	2.0	No. 2 crust at 3.5 cm
408-420	.435	M	2.5	No. 2 crust at 0.1 cm
420-427	.467	D	1.5	No. 1 crust at 2.5 cm
427-432	.415	L	3.0	
432-446	.453	D	2.0	
446-456	.485	D	1.0	
456-464	.458	D	1.5	No. 3 crust at 3.0 cm
464-474	.462	D	2.0	
474-481	.449	M	1.5	
481-490	.449	L	3.0	No. 2 crust at 2.5 cm; dense from 2.5 cm to 10.3 cm, 1.5 mm
490-500	.479	D	1.5	No. 3 crust at 1.5 cm
500-506	.488	D	1.5	Sastrugi surface at 5 cm
506-514	.450	M	2.0	
514-518	.473	D	3.0	
518-530	.492	D	2.0	
530-541	.460	L	5.0	No. 1 crust at 4.0 cm; dense and 2 mm grains on bottom
541-556	.484	D	2.0	No. 3 crust at 14 cm; medium zone 4-5 cm
556-566	.490	D	1.5	Medium and 2.5 from 4.5 to 9.6 cm
566-576	.488	D	1.5	No. 2 crust at 0.5 cm (3 mm thick)
576-583	.442	D	1.5	
583-589	.518	D	1.0	
589-604	.498	D	2.0	No. 2 crust at 14
604-607	.473	D	1.5	
607-612	.460	M	2.5	
612-618	.527	D	1.0	
618-628	.491	M	1.5	
628-638	.508	D	1.5	No. 3 crust at 2.0 cm; No. 2 crust at 7.5 cm
638-642	.460	L	3.5	

Station Byrd Station Seismic Area Pit No. 1 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
642-654	.488	M	2.0	Dense from 0-2 cm; No. 3 crust at 3.0 cm
654-659	.520	D	1.5	
659-663	.490	M	1.5	
663-672	.530	D	1.0	
672-682	.510	D	0.5	No. 3 crust at 6.5 cm; medium and 1.5 mm from 4 to 10.4 cm
682-690	.518	D	1.5-2.0	No. 3 crust at 4.0 to 4.5 cm
690-700	.523	D	1.5	No. 1 crust at 2 cm
700-704	.502	D	0.5	No. 3 crust on either side of 2 cm loose layer
704-707	.564	D	<1.0	
707-720	.512	D	1.5	No. 1 crust at 0.5 cm
720-725	.529	M	2.0	No. 2 crust at 0.1 cm
725-735	.493	M	2.5	No. 1 crust at 0.1 cm
735-744	.519			Loose and 2.5 mm at 0-4 cm; dense and 1.0 mm at 4.0-8.6 cm; sastrugi surface
744-756	.524	D	1.5	
756-767	.534	D	1.5	Medium and 2 mm at 5.5-6.0 cm
767-770	.510	M	2.0	
770-778	.569	D	1.5	No. 3 crust at 0.5 cm
778-788	.515	M	2.0	No. 2 crust at 7.0 cm
788-796	.541	D	1.0	No. 3 crust at 5.0 cm
796-806	.516	M	2.0	No. 3 crust at 7.0 cm; dense at 7.0-10.0 cm
806-821	.539	D	1.5	No. 1 crust at 13.5 cm
821-828	.557	D	1.0	No. 2 crust at 0.5 cm
828-832	.555	D	1.5	
832-844	.520	M	2.0	No. 3 crust at 0.5 cm
844-852	.558	D	1.5	No. 3 crust at 1.0 cm
852-864	.535	D	2.0	
864-871	.565	D	1.5	No. 1 crust at 2.0 cm; No. 2 crust at 5.0 cm
871-874	.526	M	1.5	
874-883	.558	D	1.0	No. 1 crust at 0.5 cm; No. 1 crust at 6.0 cm; medium and 2 mm at 6.0-9.0
883-890	.560	D	1.5	
890-901	.548	D	1.0	Medium and 2.0 mm at 0.0-4.5; No. 3 crust at 4.5 cm
901-912	.554	M	2.0	No. 1 crust at 2.0 cm
912-920	.550	M	2.0	No. 2 crust at 2.0 cm
920-935	.538	D	2.0	
935-940	.532	M	2.0	No. 1 crust at 3 cm; loose at 3.0 to 5.4 cm
940-947	.560	D	1.0	
947-960	.536	M	3.0	
960-976	.533	L	2.5	No. 3 crust at 15.5


RAM HARDNESS
1000 800
TEMPERATURE, °C
600 400 200
-30 -20 -10
0 STRATIGRAPHIC
0 PROFILE.2
DENSITY
0.4 0.6 0.8
STATION #2
DATE 17 March 1958 TIME Z
LOCATION Byrd Station
Seismic Area
OBSERVERS Long and Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
SAS
GRAIN SIZE, m.m.
DEPTH, M.
DEPTH, M.
TEMP AT 10M.
-28.3°C

Byrd Station
Station Seismic Area Pit No. 2
Date 17 March 1958
Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hard-ness	Grain Size, mm	Remarks
0- 5	M	<.5	
3 & 5			Thin crusts
5- 10	H	.5-1.0	
10- 27	S	.5-1.5	
27			Crust, granular, (4 mm thick)
27- 29	M	.5-1.5	
29			Crust, granular, (4 mm thick)
29- 30			Crusts, divided
30- 37	S	1.0-3.0	Extra soft layer, drip grains
37- 41	S	1.0-2.0	
41			Crust
41- 47	S	.5-1.0	Harder than 37-41
47			Crust
47- 50	S	1.0-3.0	Drip grains, extra soft, loose
50			Crust
50- 54	S	1.0-4.0	Drip grains, extra soft, loose
54- 58	M	.5-3.0	Drip grains, undulating bottom surface
58- 59		1.0-4.0	Drip grains
59			Crust (5 mm thick)
59- 60	M	1.0-3.0	Drip grains
60			Crust (6 mm thick)
60- 74	H	.5-2.0	
74- 76	S	1.0-3.0	Loose, drip grains
76- 85	S	2.0-5.0	Drip grains, sublimation crystals, loose
85- 88	S	2.0-5.0	Drip grains, sublimation crystals, loose
88- 91	VH	.5-1.5	Drip grains
91- 93	S	2.0-4.0	Drip grains, loose
93			Crust, 3 mm thick
93-100	S	1.0-4.0	Sublimation crystals
100-105	M	2.0-4.0	Drip grains
105-107		3.0-7.0	Drip grains, sublimation crystals
107-110	M	1.0-4.0	Softer than 100-105
110			Crust, 2 mm thick
110-115	M	2.0-4.0	Drip grains
115-119	S	1.0-3.0	Loose, drip grains
119-123	H	1.0-3.0	Drip grains
123-127	VH	.5	
127-131	M	1.0-2.0	
131-137	H	1.0-2.0	
137-151	H	1.0-2.0	
151-155	M	1.0-3.0	Drip grains
155			Crust, thin
155-159	M	1.0-3.0	Drip grains, harder than 151-155

Station: Byrd Station Seismic Area Pit No. 2 (Continued)

Depth cm	Hardness	Grain Size, mm	Remarks
159			Crust, thin
159-162	M	2.0-4.0	Drip grains
162-169	H	1.0-2.5	Drip grains
169-172	M	1.0-4.0	Loose, drip grains
172-176	H	1.0-3.0	Drip grains
176-177	S	2.0-4.0	Loose
177-178	H	1.0-2.0	
178-185	S	1.0-3.0	Loose, drip grains
185-189	H	1.0-2.0	
188			Crust
189-198	M	1.0-3.0	
198			Crust
198-204	S	1.0-4.0	Loose, drip grains
204-220	M	1.0-2.0	
220-232	VH	.5-1.5	
232-239	S	1.0-3.0	Drip grains, loose
239			Crust, granular
239-244	M	1.0-3.0	Loose
244			Crust, thin
244-247	M	1.0-3.0	Harder than 239-244; drip grains
247			Crust
247-254	H	1.0-2.0	Drip grains
254-256	M	2.0-4.0	Loose
256-263	VH	.5-1.0	
263-264	M	1.0-4.0	Sublimation crystals
264-270	H	1.0-2.0	Drip grains
270			Crust
270-277	H	1.0-2.0	Softer than 264-270
277			Crust
277-279	M	1.0-3.0	Drip grains
279			Crust
279-285	VH	.5-2.0	
285			Crust, very thin
285-295	VH	.5-1.5	
295-299	S	1.0-3.0	Drip grains
299-307	M	1.0-2.0	Drip grains
307-310	H	1.0-3.0	Drip grains
310-314	M	1.0-4.0	Drip grains

Byrd Station
Station Seismic Area Pit No. 2
Date 17 March 1958
Observers Long, Darling

CORE STRATIGRAPHY

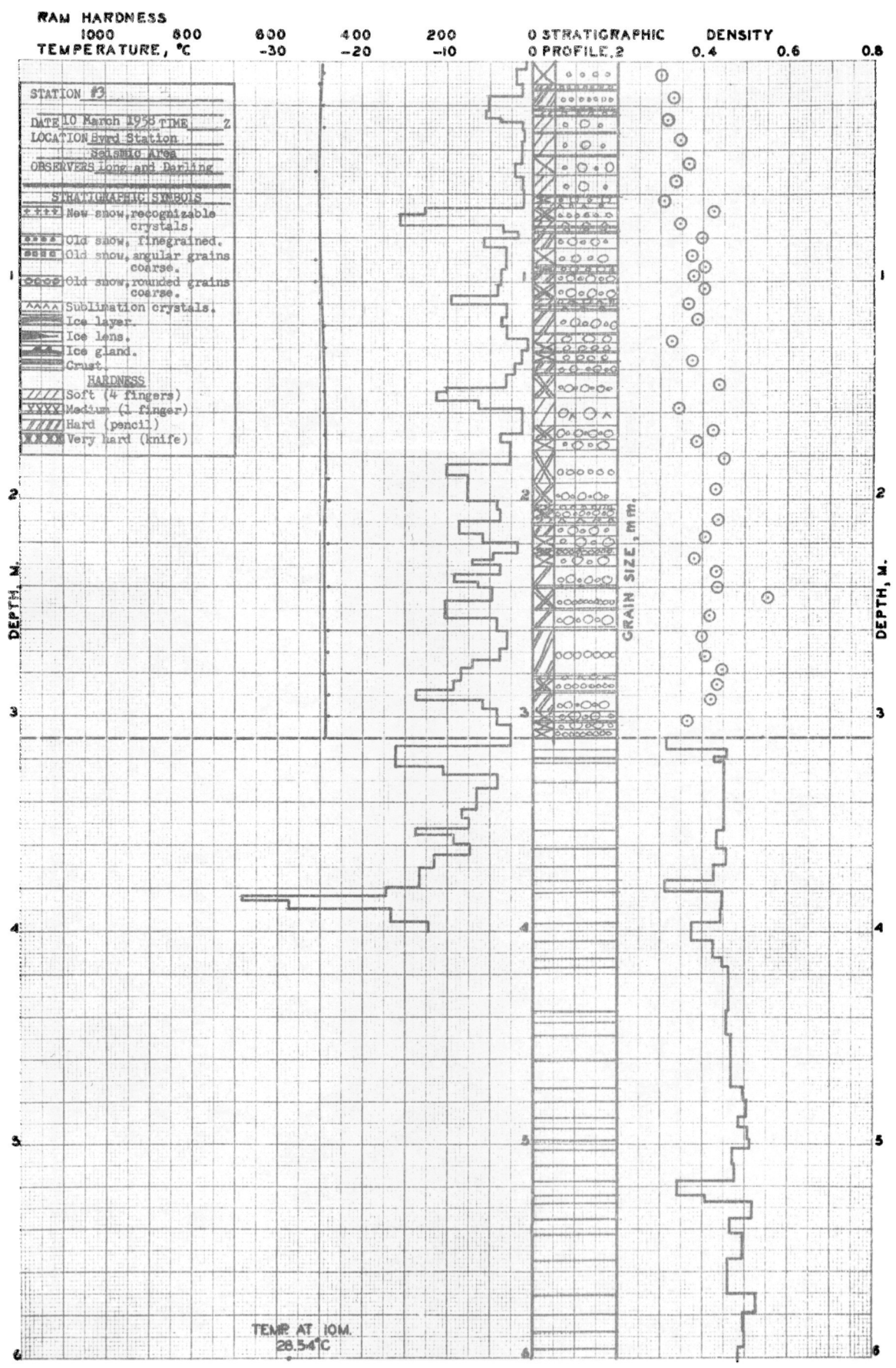
Depth cm	Density	Packing	Grain Size	Remarks
				Waste from cuttings, 22 cm
315-323	.462	M	2.0	
323-326	.401	L	2.5	
326-341	.465	D	1.5	
341-349	.357	L	3.0	Medium and 2 mm at 5.5-8.1 cm
349-353	.486	D	1.5	
353-368	.424	L	2.0	No. 2 crust at 1.0 cm; break at 11.0 cm
368-378	.409	M	3.0	
378-387	.466	M	1.5	No. 2 crust at 4.0 cm
387-392	.404	L	3.0	
392-395	.373	M	2.5	
395-402	.458	D	2.0	
402-405	.405	L	3.0	No. 2 crust at 3.0 cm
405-419	.471	D	2.0	Medium packing 10.0-13.8
419-426	.400	L	2.5	Some of core gone (approx. 2.5 cm3)
426-436	.449	M	1.5	
436-442	.474	D	1.0	No. 3 crust at 2.5 cm; medium packed at 2.5-3.5 cm; No. 3 crust at 3.5 cm
442-446	.448	D	1.5	Loose and 3 mm 0.0 to 1.0 cm
446-455	.501	D	1.0	No. 2 crust at 9.0 cm
455-460	.433	M	3.0	
460-467	.465	D	2.0	
467-472	.406	L	4.0	No. 2 crust at 4.0 cm; break at 3.0 cm
472-478	.494	D	1.5	
478-482	.442	M	2.5	
482-484	.500	D	1.0	
484-499	.457	M	1.5-2.0	
499-511	.470	L	2.0-2.5	
511-526	.428	L	2.5	Break at 5.0 cm
526-540	.486	M	2.0	No. 2 crust at 8 cm and 11.5 cm and 13.5 cm
540-546	.523	D	1.0	
546-548	.452	M	2.5	
548-551	.518	D	2.0	No. 2 crust at 2.0 cm
551-564	.480	M	2.0	No. 3 crust at 2.0 cm and 9.5 cm
564-573	.523	D	1.0	
573-576	.491	L	2.5	
576-580	.536	D	1.0	
580-587	.490	M	2.5	Loose packing 4.5-6.5 cm
587-594	.482	M	2.0	No. 3 crust at 4.0 cm; No. 2 crust at 7.0 cm
594-605	.493	M	3.0	

Station Byrd Station Seismic Area Pit No. 2 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
605-610	.489	D	1.5	No. 2 crust at 3.0 to 3.5 cm
610-615	.354	M	2.0	Loose 2.0-3.5 cm
615-626	.505	D	2.0	
626-632	.532	D	2.0	No. 3 crust at 7.5 cm
632-637	.514			Dense and 1.0 at 0.0-2.0 cm; No. 3 crust at 2.0 cm; loose and 3 mm 2.0-4.0 cm
637-641	.516	D	1.0	
641-650	.511	M	2.0	Dense at 7.0-8.5 cm; No. 1 crust at 7.0 cm
650-654	.510	M	1.5	No. 2 crust at 3.5 cm
654-662	.495	L	2.5	
662-670	.502	D	1.5	No. 2 crust at 5.0 cm
670-682	.532	D	1.5	
682-689	.504	M	2.0	
689-692	.534	D	1.0	
692-700	.537			Medium and 2.0 mm 0.0-3.5 cm; dense and 1.0 mm 3.5 to 8.0 cm
700-704	.512	L	2.5	No. 3 crust at 3.0 cm
704-712	.515	D	1.5	No. 3 crust at 5.5 to 6.0 cm
712-727	.520	M	1.5	No. 3 crust at 11.0 cm
727-744	.534	D	1.5	No. 2 crust at 14.0 cm
744-746	.492	L	3.0	
746-750	.536	M	2.0	No. 2 crust at 2.0 cm
750-754	.491	L	3.0	No. 2 crust at 7.5 cm
754-761	.533	D	2.5	
761-763	.566	D	1.0	No. 1 crust at 2.0 cm
763-769	.526	M	2.0	No. 2 crust at 1.0 cm
769-772	.505	L	2.5	
772-778	.542			Dense 0.0-2.5 cm; medium and 2.0 at 2.5-5.5 cm
778-781	.556	D	1.5	No. 1 crust at 1.0
781-786	.548	D	2.0	No. 3 crust at 1.0; No. 2 crust at 3.0 and 5.4 cm
786-788	.552	D	1.5	
788-796	.516	M	2.5	No. 3 crust at 1.5 cm
796-808	.536	D	1.5	No. 3 crust at 8.0 cm
808-810	.543	M	1.5	No. 2 crust at 1.0 cm
810-818	.540	D	2.0	No. 2 crust at 2.0 cm; No. 3 crust at 6.0 cm
818-822	.555	D	1.5	No. 3 crust at 2.0 cm; No. 2 crust at 0.5 cm
822-829	.551	M	2.0	
829-832	.518	M	2.0	
832-838	.550	M	1.5	
838-845	.517	M	2.0	
845-850	.517	M	2.0	
850-854	.539	D	1.5	No. 3 crust at 0.1 cm
854-860	.550	M	2.0	

Station Byrd Station Seismic Area Pit No. 2 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
860-863	.562	D	2.0	No. 2 crust at 2.5 cm
863-872	.533	M	2.5	Loose 6.0-9.2 cm
872-878	.554	D	1.5	
878-884	.536	M	2.0	
884-889	.525	M	2.0	
889-900	.521	D		Medium packing 0-1 cm; No. 1 crust at 11.0 cm
900-906	.563	D	1.5	
906-917	.548	D	1.5	No. 3 crust at 4.0 cm; medium and 2.5 at 4.0-11.1 cm
917-922	.548	D	2.5	No. 2 crust at 0.5 cm
922-931	.566	D	2.0	No. 2 crust at 6.0 cm
931-936	.566	D	2.5	No. 2 crust at 5.0 cm
936-942	.560	M	2.0	
942-946	.565	D	1.5	
946-951	.525	M	2.0	No. 3 crust at 0.1 cm
951-964	.535			Loose and 3.5 mm at 0.0-5.0; medium and 2.0 5.0-13.0 cm
964-975	.522	L	3.5	Dense at 0.0-2.0; No. 1 crust at 2.0 cm


RAM HARDNESS
1000 800
TEMPERATURE, °C
600 400 200 0
-30 -20 -10 0
STRATIGRAPHIC PROFILE, 2
DENSITY
0.4 0.6 0.8
STATION #3
DATE 10 March 1958 TIME Z
LOCATION Byrd Station
Seismic Area
OBSERVERS Long and Darling
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, finegrained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, mm.
TEMP AT 10M.
28.54°C

Byrd Station
Station Seismic Area Pit No. 3
Date 10 March 1958
Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 10	M	<.5	New snow
10- 12	H	<.5	
12			2 mm loose boundary
12- 20	H	<.5	
20			Thin crust
20- 22	H	.5-1.0	
22- 23	S	.5-1.0	
23			Crust, very thin
23- 31	S	1.0-2.0	Drip grains
31			Double crust
31- 32			Crust
32- 42	S	1.0-2.0	Harder than 23-31
41			Thin crust
42			Crust, 2 mm thick
42- 51	M	1.0-2.0	
51- 60	S	1.0-2.5	Drip grains
60			Undulating crust
60- 64	M	.5-1.5	Lens shaped layer; undulating top and bottom; drip grains
64- 66	S	1.0-2.5	Extra soft and loose
66- 71	VH	.5-1.0	
71- 73	S	1.5-3.0	Drip grains; loose
73			Crust 2 mm thick
73- 76	S	1.0-3.0	Loose
76			Crust
76- 84	H	1.0-2.0	
84- 92	M	1.0-2.0	Drip grains
92- 94			Crust
94-100	H	1.0-2.0	
100-107	VH	.5-1.0	
107-109	S	1.0-3.0	Loose; drip grains
109			Crust, thin granular
109-111	S	2.0-5.0	Extra soft, loose; sublimation crystals; drip grains
111			Crust
111-123	H		Drip grains
123			Crust
123-127	S	1.5-3.5	Loose
127-131	M		Drip grains
131			Crust, 3 mm thick
131-136	M	1.0-3.0	Drip grains

Station Byrd Station Seismic Area Pit No. 3 (Continued)

Depth cm	Hard-ness	Grain Size, mm	Remarks
136			Crust, granular
136-141	H	1.0-2.0	Drip grains
141			Crust, granular
141-142	M	1.0-2.5	Drip grains
142-153	VH	.5-1.5	
153-165	S	2.0-6.0	Drip grains; extra soft; loose
165-171	VH	1.0-2.0	Drip grains
171-176	M	1.0-3.0	Drip grains
176-191	VH	.5-1.5	
191-202	VH	.5-2.0	
202-203	M	1.0-2.0	Loose
203-208	VH	.5-1.5	Drip grains
208-209			Crust with loose area above and below
209-216	H	1.0-2.0	Drip grains
216-221	M	1.0-2.0	Drip grains
221-224	VH	1.0-2.0	Drip grains
224-230	M	1.0-3.0	
230-239	H	1.0-2.0	
239-240	S	2.0-4.0	Loose layer; sublimation crystals; drip grains
240-241	H	1.0-2.0	Drip grains
241-249	VH	.5-1.5	
249			Crust, very thin
249-258	H	1.0-2.0	
258			Crust, very thin
258-281	H	1.0-2.0	Drip grains
281-282	S	1.0-4.0	Loose
282-287	VH	.5-1.5	
287			Thin crust
287-297	H	1.0-2.0	Drip grains
297-301		2.0-4.0	Drip grains
301-302			Crust, granular, 3 mm
302-306	M	1.0-4.0	Drip grains
306-310	VH	.5-1.0	

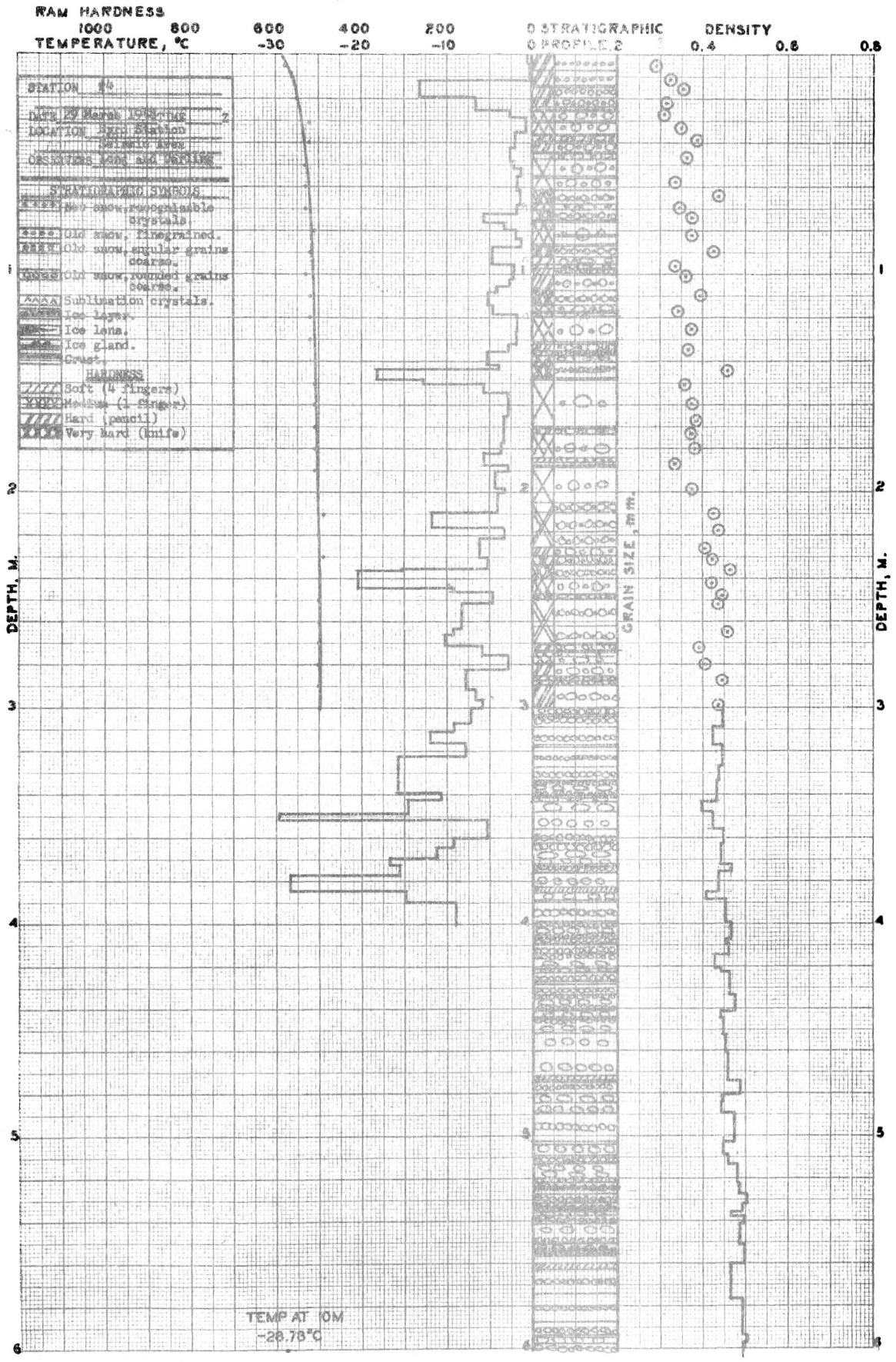
Byrd Station
Station Seismic Area Pit No. 3
Date 10 March 1958
Observers Long, Darling

CORE STRATIGRAPHY

Depth cm	Density	Packing	Grain Size	Remarks
310-316	.317		L	Crust at 5.5 cm
316-320	.458		S	
320-321	.427		S	
321-332	.451	D	S	
332-353	.451	L	L	Dense and small 1-2 cm
353-362	.436	D	S	
362-369	.456	D		Loose 0-2.5 cm
369-377	.427	L		Two crusts at 1.0 cm
377-382	.311	L	L	Break in core
382-390	.447	D		Crust at 0.5 cm (thin ice); loose area and crust at 7.0 cm
390-396	.445	D		Ice crust (No. 1)
396-405	.379	L		
405-413	.425	D		
413-416	.448	D		Loose area 0.0-2.0 cm; break in core
416-438	.462			Crust, granular at 10.5 and 21.5
438-448	.459	D		Loose 9.0-10.5
448-461	.469	D	2.0	No. 2 crust at 12.0 cm
461-474	.469	D	1.5	
474-480	.496		1.5	No. 1 crust at 0.1 and 2.0 cm
480-487	.504		2.0	
487-492	.485	L	2.5	
492-498	.507	L	2.5	
498-503	.510		2.0	No. 2 crust at 0.1 cm
503-510	.470		2.0	
510-517	.475	L	3.0	
517-525	.342	L	3.0	No. 2 crust at 1.0 cm
525-527	.405	L	4.0	
527-535	.519	D	1.5	
535-543	.467	M	3.0	
543-554	.497	D	1.5	No. 3 crust at 1.0 cm
554-570	.458	M	2.0	
570-580	.527	D	1.5	
580-587	.498	L	2.5	
587-595	.499	D	1.0	No. 2 crust at 5.0 cm
595-602	.484	M	2.5	
602-615	.523	D	1.5	No. 3 crust at 11.0 cm
615-624	.515	D	2.0	No. 2 crust at 8.0 cm
624-628	.520	D	1.5	
628-638	.457	D		
638-648	.456	D		
648-655	.462	D		

Station Byrd Station Seismic Area Pit No. 3 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
655-665	.456	D		
665-674	.469	D		
674-678	.502	D	4.0	
678-681	.501		2.0	
681-693	.491		4.0	
693-701	.520		3.0	
701-715	.516		3.0	
715-734	.522		4.0	
734-742	.532		1.0	
742-748	.497		4.0	Crust in middle
748-759	.537		2.0	
759-766	.526		3.0	
766-773	.575		2.0	
773-786	.525	M	1.5	No. 1 crust at 2.0 to 3.0 cm
786-795	.518	M	1.5	No. 1 crust at 4.0 to 5.0 cm
795-803	.515	L	2.0	
803-808	.496	L	3.0	
808-816	.554	D	1.5	
816-827	.504	M	2.0	
827-836	.545	D	1.0	No. 3 crust at 7.0 cm
836-849	.546	D	1.5	
849-860	.542	D	2.0	
860-871	.566	D	1.0	
871-882	.552	D	1.0	No. 3 crust at 3.0 cm
882-887	.526	L	3.0	No. 3 crust at 0.5 cm
887-897	.528	L	2.5	No. 1 crust at 3.5 to 4.5 cm
897-908	.543	M		Double No. 1 crust at 3.5 to 5.0 cm
908-919	.530	D	2.0	
919-930	.567	D	1.0	No. 2 crust at 0 to 1 cm; No. 1 crust at 8.5-10.0 cm; loose 10.0-11.0 cm
930-944	.538	M	1.5	No. 2 crust at 0-1 cm
944-				


RAM HARDNESS
1000 800
TEMPERATURE, °C
600 400 200
-30 -20 -10
STRATIGRAPHIC PROFILE
DENSITY
0.4 0.6 0.8
STATION #4
DATA 29 March 1956 TIME 2
LOCATION Byrd Station
Antarctic Area
OBSERVERS Long and Perkins
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, fine grained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
GRAIN SIZE, mm.
DEPTH, M.
DEPTH, M.
TEMP AT 10M
-28.78°C

Byrd Station
Station Seismic Area Pit No. 4
Date 29 March 1958
Observers Long, LeSchack

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 7	H	<.5	New snow
7- 14	H	<.5	
14			Irregular thin crust
14- 20	H	.5-1.0	Harder than 7-14 and 20-24
20- 24	H	.5-1.5	
24- 25	M	1.0-1.5	
25			Crust, granular, thin
25- 30	M	1.0-2.0	Drip grains
30- 36	M	1.0-2.0	Harder than 25-30
36			Crust, granular, 2 mm
36- 39	H	.5-2.0	
39			Crust, thin, granular
39- 44	H	1.0-3.0	Harder than 36-39, drip grains
44			Crust, granular, thin
44- 47	M	1.0-2.5	Drip grains
47- 55	M	1.0-2.0	Drip grains
55			Crust, granular, 3 mm
55- 61	M	1.0-2.5	
61- 68	VH	.5-2.0	Drip grains
68- 70	S	1.0-2.0	Drip grains
70- 75	VH	1.0-1.5	
74			Crust, thin
75			Crust, thin
75- 86	M	1.0-3.0	Drip grains
82 & 86			Thin crust
86- 92	VH	1.0-2.0	Drip grains
92- 95	S	2.0-4.0	Loose, drip grains
95- 97	S	1.0-3.0	Drip grains
97-100	H	1.0-2.0	Drip grains
100-107	H	.5-1.5	Softer than layer above and below, drip grains
107-114	VH	.5-1.5	
114-117	M	1.0-3.0	Drip grains
117			Crust, granular
117-119	S	1.0-5.0	Drip grains
119-131	M	1.0-4.0	Drip grains
131			Crust, granular
131-135	H	1.0-3.0	Drip grains
135-137	VH	1.0-2.0	Drip grains
137-140	M	2.0-5.0	Drip grains
140-147	VH	.5-1.5	
147-170	M	1.0-4.0	Drip grains

Station Byrd Station Seismic Area Pit No. 4 (Continued)

Depth cm	Hardness	Grain Size, mm	Remarks
149			Crust
170			Crust, thin
170-173	H	1.0-3.0	Drip grains
173-184	M	1.0-2.5	Drip grains
184-186	S		Loose, sublimation crystals, drip grains
187			Crust, granular, 2 mm
187-205	M	1.0-3.0	Drip grains
205-209	VH	.5-2.0	Softer than 187-205
209-218	VH	.5-1.5	
218-225	VH	1.0-2.5	
225-229	H	1.0-3.0	Drip grains
229-233	VH	1.0-2.5	Drip grains
233-240	VH	.5-1.5	Harder than layer above
240-247	M	1.0-3.0	Drip grains
241&242			Crusts
247-249	VH	1.0-2.0	
249-262	VH	1.0-2.0	Drip grains
262-270	VH	.5-1.0	Harder than 247-262
270			Crust
270-273	H	1.0-3.0	Drip grains
273			Crust
273-276	M	1.0-4.0	Drip grains
276			Crust
276-279	M	1.0-4.0	Drip grains
277	VH		8 cm long VH lens
279-285	H	1.0-3.0	Drip grains
285-287	VH	1.0-3.0	Drip grains
287-289	H	1.0-2.5	Drip grains
289-300	H	1.0-3.0	Softer than layer above, drip grains

Byrd Station
Station Seismic Area Pit No. 4
Date 29 March 1958
Observers Long, Darling

CORE STRATIGRAPHY

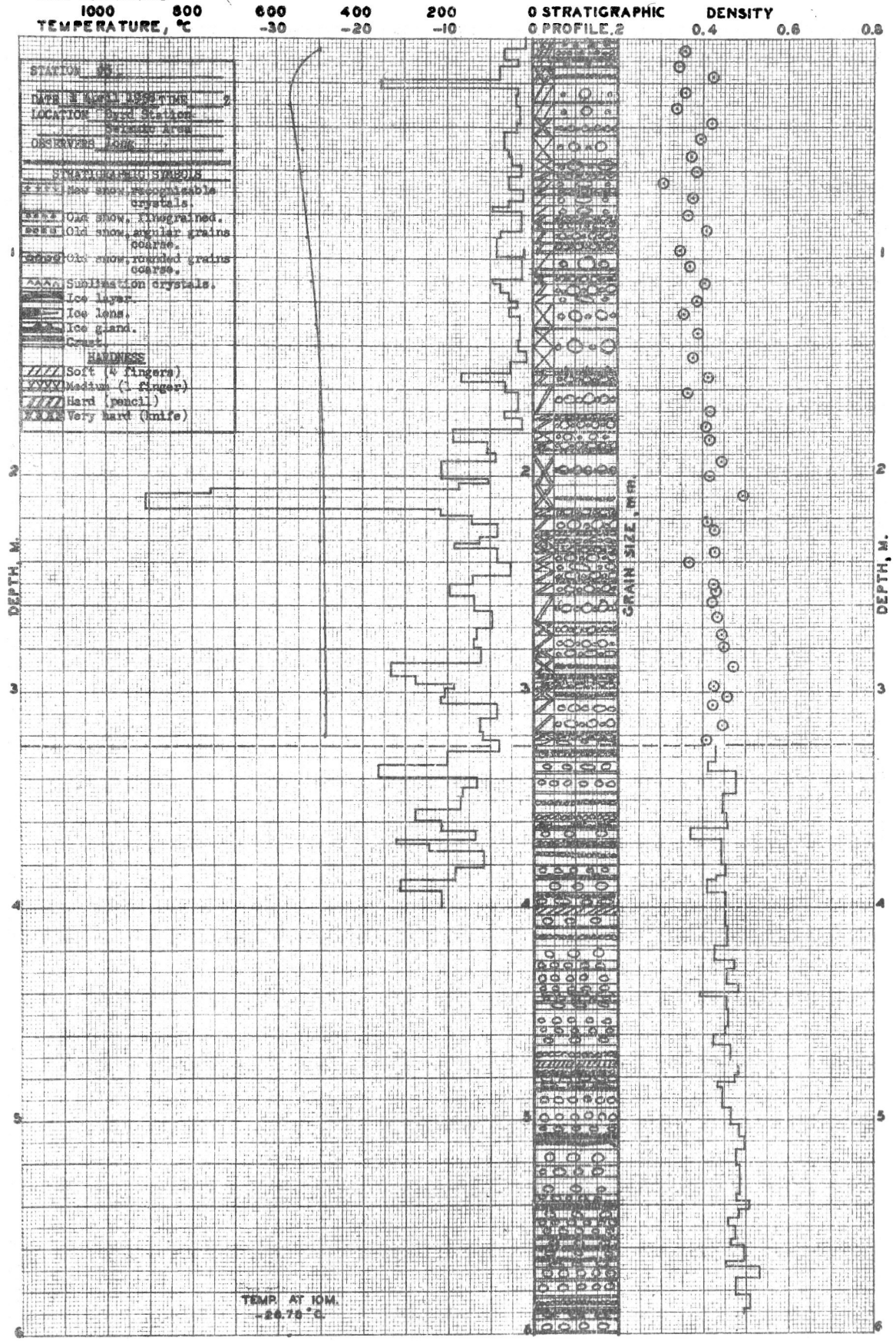
Depth cm	Density	Packing	Grain Size	Remarks
300-309	.449	D	1.5	No. 2 crust at 3.0 cm
309-316	.421	D	1.5	
316-327	.448	D	1.0	No. 2 crust at 10.0
327-333	.438	D	1.5	Break at 3.0
333-343	.437			Dense and 1.0 mm at 0.0-1.0; loose and 1.5 mm at 1.0-2.0 cm; dense and 1.0 at 2.0-4.0; loose and 2.0 mm at 4.0-6.0 cm; medium 7.0-9.5; No. 1 crust at 6.5 cm; sastrugi forms
343-348	.397			Dense and 1.0 mm at 0.0-2.0 cm; extra loose and 3.0 mm at 2.0-5.0 cm
348-356	.421	M	2.0	
356-362	.449	D	1.5	
362-372	.440			Dense and 2.0 mm at 0.0-3.0 cm; loose and 3.0 mm at 3.0-4.0 cm; medium and 1.5 at 4.0-10.0 cm; No. 3 crust at 2.5 cm
372-376	.467	D	1.5	
376-382	.436	M		
382-386				Correction for cutting
386-388	.408	M	3.0	No. 2 crust at 7.5 cm
388-400	.451	D	2.0	
400-407	.463	D	1.5	Medium and 2.0 at 2.0-4.0 cm; medium at 6.0-7.5 cm
407-410	.452	D	1.5	
410-414	.460	D	1.5	
414-421	.429			Dense and 1.0 mm at 0.0-2.0 cm
421-423	.442	M	2.0	
423-434	.463	D	1.5	No. 3 crust at 5.5 cm
434-442	.477	D	1.5	Medium and 2.0 at 1.0-2.0 cm
442-444	.442	M	2.0	
444-453	.447	M	2.5	Dense and 1.5 mm at 0.0 to 1.0-2.0; No. 1 crust at 1.0 to 2.0 cm
453-460	.454	M	2.5	
460-471	.458	M		No. 2 crust at end
471-474				Correction for cutting
474-480	.488	D	1.0	
480-484	.447	M	3.0	
484-490	.442	M	2.5	
490-503	.474	D	2.0	
503-509	.446	M	2.0	No. 3 crust at 1.0 cm
509-514	.459	D	1.5	
514-522	.480	M	2.0	Loose and 2.5 mm at 5.0-6.0 cm; dense and 1.5 mm at 6.0-8.0 cm; uneven boundaries

Station Byrd Station Seismic Area Pit No. 4 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
522-528	.482	D	1.5	No. 3 crust at 3.0 cm
528-532	.504	D	1.5	
532-536	.492	D	2.0	No. 3 crust at 4.0 cm
536-539	.464	M	2.0	
539-541	.495	D	1.5	
541-551	.482	D	1.5	Medium and 2.0 at 0.0-4.0 cm; No. 3 crust at 4.0 cm
551-557	.499	D	1.5	Medium and 2.0 mm at 0.0-2.0 cm; No. 2 crust at 2.0 cm; No. 3 crust at 3.0 cm
557-560				Correction for cutting
560-576	.465	D	1.5	
576-588	.492	D	1.5	
588-594	.491	D	1.5	No. 1 crust at 5.0 cm
594-598	.505	M	2.0	
598-607	.499			Dense and 1.5 mm at 0.0-2.0 cm; medium and 2.5 mm at 2.5-6.0 cm; loose and 3.0 mm at 6.0-9.7 cm; No. 3 crust at 2.5 cm
607-611	.506	D	1.5	
611-619	.480	D	2.0	
619-628	.476	D	2.0	No. 1 crust at 3.0 cm
628-633	.467	L	2.5	No. 3 crust at 2.5 cm
633-637	.472	M	2.0	
637-640	.490	M	2.5	
640-644				Correction for cutting
644-648	.502	D	1.0	
648-654	.490	D	1.5	No. 2 crust at 5.0 cm
654-664	.513	M	1.5	No. 3 crust at 9.0 cm
664-668	.493	M	2.0	No. 3 crust at 0.5 cm
668-671	.524	D	1.5	No. 3 crust at 0.1 cm
671-678	.483	L	2.5	
678-684	.514	D	2.0	
684-691	.512	D	1.5	No. 2 crust at 5.0 cm
691-695	.486	M	1.5	Loose and 2.5 mm at 2.5-3.5 cm
695-707	.489	M	2.0	No. 3 crust at 0.1 cm
707-717	.526	D	1.5	
717-719	.486	L	2.5	
719-726	.511	D	1.5	No. 1 crust at 5.5 cm
726-730	.506	M	2.0	
730-733				Correction for cutting
733-736	.520	M	2.0	
736-744	.484	M	2.5	
744-758	.515	D	2.0	Medium and 2.0 at 0.0-3.5 cm
758-761	.526	D	1.5	No. 3 crust at 1.5-2.0 cm
761-767	.476	M	2.0	
767-772	.532	D	1.5	

Station Byrd Station Seismic Area Pit No. 4 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
772-781	.521	M	1.5	
781-785	.494	M	2.0	No. 2 crust at 2.0 cm
785-790	.523	D	1.5	
790-794	.500	M	2.5	
794-798	.500	M	2.5	
798-804	.524	D	1.5	
804-816	.521	D	1.5	
816-819				Correction for cutting
819-830	.536	D	1.5	
830-835	.521	M	2.0	
835-838	.510	D	1.5	
838-845	.489	M	2.0	
845-848	.530	D	2.0	
848-859	.525	M	1.5	No. 3 crust at 9.0 cm
859-868	.552	D	1.0	No. 3 crust at 0.1 cm; No. 3 crust at 4.0 cm
868-877	.530	M	1.5	No. 2 crust at 1.5 cm
877-880	.530	D	1.0	
880-883	.548	D	1.0	
883-885	.529	D	1.5	
885-895	.548	D	1.0	No. 3 crust at 1.0 cm
895-902				
902-906				Correction for cutting
906-908	.548	M	1.0	No. 2 crust at 2.3 cm
908-910	.495	L	3.0	No. 2 crust at 2.0 cm
910-920	.567	D	1.5	
920-923	.556	D	1.5	No. 3 crust at 2.0 cm
923-930	.523	D	1.5	
930-933	.536	D	1.0	
933-942	.550	D	1.5	No. 1 crust at 8.0 cm
942-946	.544	M	2.0	Double No. 1 crust at 3.0 cm
946-954	.536	M	1.5	No. 2 crust at 6.0 cm
954-965	.546	D	2.0	
965-971	.556	D	1.5	Medium and 3.0 mm at 0.0-1.5 cm
971-975	.539	M	2.0	No. 2 crust at 3.5 cm
975-978	.543	M	2.5	Dense and 1.5 mm at 0.0-0.5 cm; double No. 1 crust at 0.5 cm
978-982	.570	D	1.5	
982-989	.536	M	2.0	
989-992				Correction for cutting


RAM HARDNESS
1000
800
600
400
200
TEMPERATURE, °C
-30
-20
-10
0 STRATIGRAPHIC
0 PROFILE.2
DENSITY
0.4
0.6
0.8
STATION #8
DATE & EARLY MORNING
LOCATION Byrd Station
Seismic Area
OBSERVER Long
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, fine grained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
DEPTH, M.
GRAIN SIZE, MM.
TEMP. AT 10M.
-26.75°C.

Byrd Station
Station Seismic Area Pit No. 5
Date 1 April 1958
Observers Long, LeSchack

STRATIGRAPHIC DATA SHEET

Depth cm	Hardness	Grain Size, mm	Remarks
0- 1	S	<.5	Fresh snow
1- 4	M	.5 and less	New looking snow
4- 8	H	.5 and less	
8- 10	H	.5 and less	
10- 12	S	.5 and less	
11			Crust, thin granular
12- 20	VH	.5-1.0	Drip grains
20- 28	S	.5-2.0	Drip grains
28			Crust, granular, 3 mm
29- 35	S	1.0-2.5	Drip grains
35- 43	VH	.5-1.5	
43- 54	M	.5-2.5	Drip grains, variable thickness
54- 60	S	1.0-4.0	Drip grains
56			Crust, very thin
61			Crust, granular
60- 63	H	1.0-2.0	Drip grains
63- 64	S	1.0-3.0	Loose, drip grains
64			Crust, granular
64- 67	S	1.0-3.0	Loose, drip grains
67- 70	H	.5-1.0	Drip grains
70			Crust, level granular, 2 mm
70- 75	S	1.0-3.0	Loose, drip grains
75- 80	S	1.0-3.0	Harder than layer above, drip grains
80- 83	H	.5-2.0	
83			Crust, thin granular
83- 86	M	1.0-3.0	Drip grains
86			Crust, thin granular
86- 92	H	.5-2.0	Drip grains
92			Crust, thin granular
92- 96	H	1.0-2.0	Drip grains
96- 97	M	1.0-4.0	Drip grains
97			Crust, very thin
97-107	S	1.5-4.0	Drip grains
104			Crust, very thin
107			Crust, very thin
107-111	VH	.5-1.5	Drip grains
111-116	H	1.0-3.0	Drip grains
116-120	S	1.0-4.0	Drip grains

Station: Byrd Station Seismic Area Pit No. 5 (Continued)

Depth cm	Hardness	Grain Size, mm	Remarks
120-131	M	1.5-4.0	Drip grains
131			Crust, thin level
131-132	S	2.0-4.0	Drip grains
132-150	M	1.0-3.0	Drip grains
150-151	S	2.0-5.0	Loose, sublimation crystals, drip grains
151-153	VH	.5-2.0	
153-157	H	1.0-2.0	Drip grains
157			Crust, granular and level, 2 mm thick
157-171	H	2.0-3.0	Drip grains
171-173	H	1.0-4.0	Drip grains
173			Crust, thin granular
173-179	H	.5-2.0	Harder than 153-173, drip grains
179-184	M	.5-1.5	
184-187	VH	1.0-2.0	
187			Crust
187-189	M	1.0-3.0	Drip grains
189-204	VH	.5-2.0	
198			Crust
204-215	VH	.5-1.0	Extra hard layer
215-218	H	1.0-3.0	Drip grains
216			Thin crust
218			Thin crust
218-225	H	2.0-4.0	Drip grains
225-227	VH	.5-2.0	
227-232	VH	1.0-3.0	Drip grains
232-235	VH	.5-1.5	
235-240	H	1.0-2.5	
240-244	M	1.0-4.0	Drip grains
244-248	H	1.0-3.0	
248-249	H	1.5-4.0	Softer than layer above and below, drip grains
249-254	H	1.0-2.0	
254			Crust
254-267	H	1.0-4.0	Drip grains
267			Crust, thin
267-273	VH	1.0-2.0	Drip grains
273-280	H	1.0-2.0	
280-283	VH	1.0-2.0	
283-291	VH	.5-1.5	Harder than layer above
291			Crust, granular
291-293	VH	.5-1.5	Uneven bottom
293-295	M	1.0-4.0	Loose, drip grains
295-298	VH	1.0-3.0	Drip grains
298-303	VH	.5-1.0	Harder than layer above
303-310	H	2.0-4.0	Drip grains
310-318	H	1.0-2.5	Drip grains

Station Byrd Station Seismic Area Pit No. 5 (Continued)

Depth cm	Hardness	Grain Size, mm	Remarks
318			Crust, thin granular
318-322	VH	1.0-1.5	
322-324	S	1.0-3.0	Drip grains

Byrd Station
Station Seismic Area Pit No. 5
Date 1 April 1958
Observers Long

CORE STRATIGRAPHY

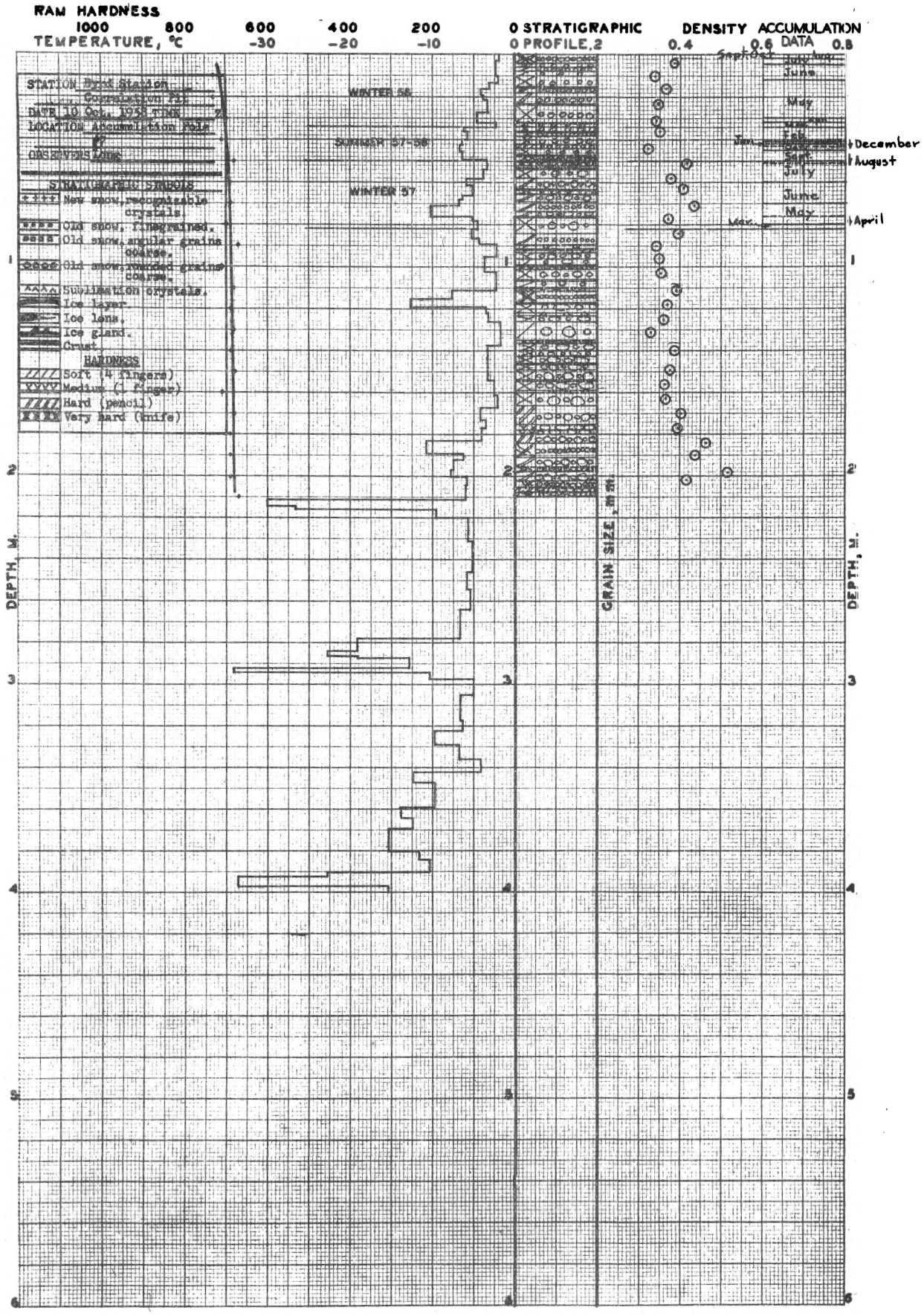
Depth cm	Density	Packing	Grain Size	Remarks
325-332	.430	D	1.5	No. 3 crust at 2.0 cm
332-337	.412	L	2.5	
337-348	.479	M	1.5	No. 3 crust at 8.5 cm
348-356	.447	D	1.0	
356-361	.456	D	1.5	
361-363	.459	L	2.0	Dense and 1.0 mm at 1.5-2.5; crust at 2.5 cm
363-369	.372	L	2.5	
369-381	.444	D	1.5	No. 3 crust at 3.0 cm
381-385	.452	M	1.5	Dense at 0.0-0.5 cm; No. 2 crust at 0.5 cm
385-387	.430	L	2.0	Dense at 1.0 to 2.0
387-393	.410	L	3.0	
393-399	.453	D	1.5	Medium and 2.5 mm at 4.0-6.0 cm
399-402				Correction for cutting
402-410	.451	L	2.0	Medium and 2.0 mm at 4.5-7.3 cm
410-418	.457	D	1.0	
418-426	.427	L	2.5	
426-429	.473	M	1.5	
429-436	.455	M	1.5	No. 3 crust at 4.0 cm
436-440	.481	M	1.5	
440-442	.392	L	3.0	
442-448	.453	M		Loose at 2.0-6.0 cm; No. 3 crusts at 2 cm and 4 cm
448-456	.458	M	1.5	
456-461	.452	M	2.0	No. 3 crust at 3.0 cm
461-465	.426	L	1.5	
465-472	.466	D	1.5	
472-475				Correction for cutting
475-479	.481	D	1.0	
479-483	.474	M	2.0	
483-486	.434	L	2.0	
486-495	.444	M	2.5	Dense at 0.0-1.0 cm; rest of core gradational loose to medium; break at 4 cm
495-503	.464	M	1.5	
503-509	.484	M	1.5	Dense and 1 mm at 4.0-5.8 cm
509-514	.498	D	1.0	No. 1 crust at 2.5 cm
514-522	.477	L	2.0	
522-527	.484	M	2.0	
527-535	.484	M	2.0	Medium and 1.5 at 0.0-1.0 cm; break at 3.5 cm
535-538	.479	M	1.5	
538-542	.508	D	1.0	No. 3 crust at 1.0 cm
542-546	.508	D	1.0	No. 3 crust at 1.0 cm

Station Byrd Station Seismic Area Pit No. 5 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
546-550	.458	M	1.5	
550-556	.475	M	2.0	No. 3 crust at 4.5 cm; dense and 1.5 mm at 4.5-6.0 cm
556-559	.466	L	3.0	
559-562				Correction for cutting
562-567	.496	D	1.5	Loose and 2.0 mm at 2.0-3.0 cm
567-569	.451	L	2.5	
569-574	.532	M	2.0	No. 2 crust at 5.0 cm
574-582	.477	M	2.0	Loose at 1.0-2.0 cm
582-589	.510	D	1.0	No. 2 crust at 0.1 cm
589-592	.493	D	1.0	No. 3 crust at 0.1 cm
592-593		L	4.0	Very loose airy zone
593-599	.478	M	2.0	No. 1 crust at 6.0 cm
599-605	.464	M	2.5	Loose and 2.5 at 0.0-2.5 cm
605-609	.514	D	1.0	
609-616	.464	L	2.5	Medium and 1.5 at 0.0-1.0 cm; medium and 1.5 at 4.0-7.0; No. 1 crust at 5.5 cm
616-619	.506	D	2.0	
619-622	.545	D	1.0	
622-628	.490	M	2.5	
628-635	.500	M	1.5	
635-642	.502	M	1.5	No. 3 crust at 5.5 cm
642-646	.522	D	1.0	
646-650				Correction for cutting
650-655	.487	D	2.0	
655-659	.453	L	2.5	
659-664	.537	D	1.0	
664-674	.499	M	2.0	Break at 5.0 cm
674-679	.508	M	2.0	No. 2 crust at 3.0 cm
679-684	.464	L	2.5	
684-697	.500	M	2.0	
697-704	.501	D	1.5	
704-712	.512	M	2.0	
712-715	.468	L	2.5	
715-719	.534	D	1.5	
719-721	.491	M	2.0	
721-724	.516	D	1.5	
724-731	.478	M	2.0	
731-736	.520	D	1.5	No. 1 crust at 4.8 cm
736-741	.507	M	2.5	
741-744				Correction for cutting
744-754	.531	D	1.5	
754-760	.516	M	1.5	No. 1 crust at 0.1 cm and 5.0 cm
760-765	.517	D	1.5	
765-775	.512	M	1.5	

Station: Byrd Station Seismic Area Pit No. 5 (Continued)

Depth cm	Density	Packing	Grain Size	Remarks
775- 779	.536	M	2.0	Very loose at 4.0-5.0 cm; No. 1 crust at 4.0 cm; break at 4.0 cm
779- 786	.552	D	1.5	
786- 793	.551	D	1.0	No. 1 crust at 1.0 cm
793- 797	.547	D	1.0	
797- 803	.536	D	1.5	
803- 808	.513	M	2.5	No. 3 crust at 2.5 cm
808- 817	.537	D	1.0	No. 1 crust at 8.0 cm; No. 3 crust at 9.0 cm
817- 820	.533	M	1.5	Dense at 0.0-0.5 cm
820- 826	.535	D	1.0	No. 3 crust at 0.1 cm
826- 829				Correction for cutting
829- 842	.365	M	1.5	
842- 845	.494	L	2.0	No. 3 crust at 1.0 cm
845- 849	.564	D	1.0	
849- 857	.526	M	2.0	No. 1 crust at 1.0 cm
857- 860	.510	L	2.0	
860- 863	.506	M	2.0	
863- 871	.559	D	2.0	No. 3 crust at 6.5 cm
871- 878	.523	M	2.5	
878- 882	.538	D	1.5	
882- 886	.523	L	2.0	
886- 894	.543	D	1.0	No. 2 crust at 7.9 cm
894- 897	.548	D	1.0	
897- 899	.507	L	3.0	
899- 907	.532	D	1.5	
907- 914	.539	M	2.0	No. 1 crust at 2.0 cm
914- 917				Correction for cutting
917- 924	.552	D	1.5	
924- 935	.561	D	1.0	No. 2 crust at 9.0 and 10.0 cm
935- 938	.565	D	1.0	Medium and 1.5 mm at 1.0-2.5; No. 2 crust at 0.1 cm; No. 1 crust at 1.0 cm
938- 941	.542	M	2.0	No. 2 crust at 3.0 cm
941- 943	.568	D	1.0	
943- 948	.529	M	3.0	
948- 959	.546	D	1.5	
959- 964	.559	M	1.5	Loose and 2.5 mm at 2.5-3.0 cm; No. 3 crust at 3.0 and 4.0 cm
964- 968	.541	M	2.0	
968- 975	.538	D	1.5	
975- 977	.552	D	1.0	
977- 985	.572	D	1.0	No. 1 crust at 3.0 and 4.0 cm
985- 988	.543	M	2.0	No. 3 crust at 2.5 cm
988- 991	.558	D	1.0	
991-1002	.545	D	1.5	No. 2 crust at 8.0 cm
1002-1005				Correction for cutting


RAM HARDNESS
1000
800
600
400
200
0
TEMPERATURE, °C
-30
-20
-10
0 STRATIGRAPHIC PROFILE.2
DENSITY ACCUMULATION DATA
0.4
0.6
0.8
STATION Byrd Station
Correction +2
DATE 10 Oct. 1958 TIME
LOCATION Accumulation Pole
OBSERVERS Long
STRATIGRAPHIC SYMBOLS
New snow, recognizable crystals.
Old snow, fine grained.
Old snow, angular grains coarse.
Old snow, rounded grains coarse.
Sublimation crystals.
Ice layer.
Ice lens.
Ice gland.
Crust.
HARDNESS
Soft (4 fingers)
Medium (1 finger)
Hard (pencil)
Very hard (knife)
WINTER 58
SUMMER 57-58
WINTER 57
Sept.
Oct.
Aug.
July
June
May
Jan.
Mar.
December
August
April
DEPTH, M.
GRAIN SIZE, m m.
1
2
3
4
5
6

Station Byrd
Date 10 October 1958
Observers Long, Darling

STRATIGRAPHIC DATA SHEET

Correlation Pit--Accumulation Flag No. 7

Depth cm	Hardness	Grain Size, mm	Remarks
1- 4	VH	<.5	Uneven sastrugi surface
4- 6	M	<.5	
6- 8	H	<.5	
8- 10	S	<.5	
10- 15	M		
15			Granular crust, continuous
15- 18	H	<.5	
18- 23	H	.5	Softer than layer above
23			Crust, not continuous
23- 32	M		
32			Very thin (1 mm) granular crust
32- 34	M	.5-1.0	
34- 36	M	.5-1.0	Softer than layer above, sastrugi form
36			Crust, distinct and continuous
36- 38	H	.5-1.0	
38- 42	M	.5-1.0	
42- 44	H	.5-1.0	
44- 47	M	1.0	More space between grains
47			Crust, not continuous
47- 50	VH	1.0-1.5	
50			Crust, distinct and continuous
50- 52	VH	1.0-2.0	
52- 53	S	1.0-2.0	
53			Crust, distinct and continuous
53- 58	M	1.0-2.0	
58- 63	H	.5-1.0	
63			Crust, distinct and continuous
63- 65	M	1.0-1.5	
65- 69	H	1.0-2.0	
69- 74	H	1.0-1.5	Harder than layer above and below
74- 76	H	1.0-2.0	
76			Crust
76- 84	M	1.0-2.0	
84- 89	H	1.0	
89- 91	S	1.5-2.5	Very soft and loose layer (sublimation)
91			Crust, not continuous
91- 93	S	2.0-3.0	Loose
93			Crust, granular
93- 96	M	1.0-2.0	
96- 99	S	1.5-2.5	
99			Crust, distinct and continuous
99-101	H	.5-1.0	

Station Byrd (Continued)

Depth cm	Hard-ness	Grain Size,mm	Remarks
101-106	M	1.5-2.0	
106			Crust
106-110	S	1.0-1.5	
110			Crust, distinct and continuous.
110-111	M	1.5-2.5	Much space
111-117	H	.5-1.5	
117			Crust, granular and continuous
117-122	M	2.0-3.5	
122-123	S	4.0-5.0	Sublimation crystals, loose
123-126	M	1.0-4.0	
126-135	S	2.0-3.0	Loose
135-136	VH	1.0-1.5	Extra hard layer
136-140	M	2.0-4.0	
140-143	M	1.5-2.5	
143-146	M	2.0-3.0	
146			Crust, not continuous
146-149	M	1.0-2.0	Harder than 136-146
149-154	M	1.0-2.0	
154			Crust, granular and continuous
154-159	M	1.0-2.5	
159			Crust, granular and continuous
159-160	S	2.0-5.0	Loose, sublimation crystals
160-166	M	1.0-4.0	
166-175	H	1.0-2.0	
175-178	M	2.0-3.0	
178-180	M	1.0-2.0	Softer than layer above
180-184	H	1.0-1.5	
184-191	VH	.5-1.0	
191-195	H	1.0-2.0	
195-198	VH	.5-1.0	
198-202	H	1.0-2.0	
202-205	VH	.5-1.0	
205-207	H	2.0-3.0	
207-209	VH		